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ENVIRONMENTAL QUALITY

No. 287

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POLLUTION SEEN AS THREAT TO ASIA'S COASTAL FISHERMEN

Blantyre DAILY TIMES in English 30 Dec 80 p 6

[Text]

FOR generations, millions of people inhabiting the coastal regions of South-east Asian countries have made their living from fishing in the shallow waters of India, Malaysia, Thailand, Indonesia and the Philippines.

Accumulated knowledge, together with a respect for the behaviour of the sea, fish and weather, has enabled these people to know how and where to catch the most fish. Now this way of life which has sustained at least 25 million people, is in serious danger of becoming an extinct part of South-east Asian culture.

The reasons for the gradual disappearance of a way of life so important to so many people have been sought over a period of two years by a Japanese research team.

Their report, prepared after visiting coastal villages in the area and interviewing local fishermen, concludes that unless urgent action is taken, mechanisation, industrial pollution and the operations of large Japanese fishing companies threaten to destroy the region's livelihood.

The Goss coastline stretches 104 kilometres along the Indian Ocean. For years it has been a rich fishing ground which provided a subsistence living for the traditional fishing people known as Ramponkars, or "people with a net". But now their existence is threatened by increasing numbers of mechanised trawlers invading coastal waters.

Since 1959 the number of these trawlers has increased from four to four hundred. Scrapping the sea bed and using fine mesh nets, even young fish are caught by the trawlers.

Undoubtedly the shrimp catches of these trawlers have boosted foreign exchange earnings of the local governments, but what of the traditional coastal fishing people?

According to the report such operations "have resulted in the killing of fish eggs, destruction of the fish ecology, an alarming depletion of fish re-

sources, disastrous declines in the daily fish catch, devastation of their livelihood, and rendering large numbers of poor fishing people unemployed and impoverished..."

This situation is not uncommon to other coastal regions in South-east Asia, where governments anxious to gain increased export earnings through increased productivity in fishing, have done little to protect the interests of the local fishing people. In Thailand, for example, between 1961 and 1975 the number of trawlers fishing in coastal regions increased from 301 to 4,000.

In addition to the great increase in the numbers of trawlers over the past twenty years, fishing communities throughout South-east Asia face a growing menace from industrial pollution, not only in the coastal waters but also deep inland where fishing communities survive on fish in the rivers.

According to the report, in many areas the source of pollution is Japanese based companies. Since the end of World War II industrial development has been Japan's main priority. As a result, Tokyo Bay, the Pacific Coastal Zone and the Seto Inland Sea have lost their natural resources due to the build up of coastal industrial complexes.

This has meant the destruction of rich fishing grounds along the coast of Japan and has forced the Japanese fishing industry to become increasingly involved in exploiting fishing potential in other parts of South-east Asia.

At the same time, strict government controls implemented after the pollution-induced Minamata disease outbreak killed and maimed hundreds of Japanese has meant that large Japanese companies are now "exporting" their pollution.

an example given is the construction of the Thai Asahi Caustic Soda works 27 miles from Bangkok on Chao Phraya, Thailand's largest river. The company, which is a subsidiary of Asahi Glass Co — a member of the Mitsubishi Group — was established in 1964 to manufacture caustic soda and chlorine products.

The wastes which the factory discharged into the river included caustic soda, hydrochloric acid and mercury. A survey taken in 1978 revealed that fish caught near the factory had mercury levels of 8.33-3.4 ppm (parts per million).

The local fishermen reported that two fishing boats had been reconstructed by the factory to take waste to the Gulf of Thailand. When checked these wastes contained a high level of cyanide and a small amount — 0.02 ppm — of mercury. Also their salinity was five times that of sea water, capable of killing fish in two minutes.

It has been estimated by the Southeast Asian Fisheries Development Centre that over-fishing and industrial pollution had reduced the fish catch in the Gulf of Thailand by 150,000 tons

per annum.

Even these Japanese companies fishing outside coastal waters which, due to the difference in scale and area of operations, would appear not to be in conflict with local fishing communities, are having a detrimental effect.

Major Japanese fishing companies such as Taiyo Fisheries, Nippon Suisan Kaisha and Nishino Gyogyo, as well as major trading companies — Mitsui, Itochu, Nishiki-Iwai and Marubeni — have invested in the area.

With such large scale fishing for export — mainly shrimp and prawns — the price of shrimp has been pushed up beyond the reach of local people. It is reported that in Malaysia, where shrimp paste has been a major food item of the local people, production has now virtually ceased.

The report recommends that government action should be based on two considerations — the basic needs of the people and the need for ecologically sound development.

This must include such things as protecting local fishing communities by the strict division of fishing grounds, with penalties for encroachment of coastal fishing areas.

There is, also, it states, the need for a more integrated development approach which would give consideration to fishing, agriculture and industrial interests. — GEMINI

CSO: 5000

MINISTER DESCRIBES LAND RECLAMATION EFFORTS

Dacca THE BANGLADESH TIMES in English 28 Nov 80 p 3

[Text] Work on the pilot projects at Sitakundu and Katatuli (near Sitakundu) in Chittagong for reclamation of the land from the off-shore area is progressing well, Mr L K Siddiqui, State Minister for Power, Water Resources and Flood Control, told BSS recently.

Mr Siddiqui, who personally saw the work of the projects on Board BWDB Survey Vessel Annesha for the last few days, said that the projects were aimed at making a serious study of the entire coastal area, the patterns of tide and river currents and those of silts there.

The projects, the State Minister said, would synchronise all the natural factors and not interfere with them for helping step up the process of land accretion.

The Minister said that the pilot projects had been taken up with the onset of the current dry season as soon as the modern survey vessel had arrived from the Netherlands. Some study and preliminary work were being done for some time, however, he added.

The State Minister said that the Water Development Board will take up another pilot project at Sonadia, Maheshkhali and Sonadia island will be connected with a cross dam with the objective of stepping up the process of reclamation.

Encouraging Factor

Depending on the results of the studies, he said, massive projects for land reclamation would be taken up. One very encouraging factor, he said, is the changes that are taking place in the tide pattern in the coastal area. The changes, he said, are very "helpful" and "useful" for the purpose of land reclamation.

Mr Siddiqui said that setting up a metal spurs along the northern belt of the Hatiya island was now under "active consideration" to stop the process of erosion that has been going on for the last few years. The spurs, he said, will be set up for deflecting the Meghna current in a manner that it will no more hit either Hatiya or Sandwip.

Mr Siddiqui stressed the need for taking appropriate steps so that the newly reclaimed lands quickly stabilised for bringing them under cultivation as soon as possible.

He said the reclaimed land should be given to farmers only on a co-operative basis and not to individual ownership. He said that during his recent visit he found people building houses on the embankments which, he added, could be very disastrous. He spoke on the need for coordinated action by all local agencies of the Government at halting such action by anyone.

Mr Siddiqui said that the process of formation of Urirchar a fast coming up island on the north of Sandwip, is being threatened by cutting of the long grass on it by the people of adjoining islands. The State Minister said that paving of Kumira-Feni embankment will provide an alternative highway connecting the two points.

CSO: 5000

GANDHI APPEALS FOR ENVIRONMENT IMPROVEMENT

New Delhi PATRIOT in English 27 Dec 80 p 5

[Text] Prime Minister Indira Gandhi has asked parliamentarians to endeavour to bequeath to their children and grandchildren not a denuded environment but a better and richer India.

In a message to the newly formed "environment forum" of MPs, she said there were many threats to the preservation of resources. She was glad that parliamentarians were taking a lively interest in these problems. The future was at our door-step, she said.

Mrs Gandhi said, "in life the immediate should not become the enemy of the important. What we do today ought not to prejudice what we might have to do tomorrow. But economic man has been guided more by greed than by wisdom. He has felled trees, destroyed forests, ripped open the earth, wiped away many species of plants and animals, burnt up fuel. [as published] He arrogantly regards all creation as his slave".

She said, "from the beginning of time, sages have warned human beings not to be rapacious and to look upon all life and even non-life with kindly eyes".

Only now when the technology of warfare and economic exploitation has become ruthlessly efficient, have a large number of people become suddenly aware that life itself might be extinguished and that nature will not care for man unless he cares for it, she added.

CSO: 5000

HOUSE PASSES BILL ON AIR POLLUTION CONTROL

Bombay THE TIMES OF INDIA in English 24 Dec 80 p 9

[Text] New Delhi, December 23 (PTI).

The Lok Sabha today unanimously passed the air (prevention and control of pollution) bill, piloted by the works and housing minister, Mr. Bhisma Narain Singh. [as published]

Earlier, initiating the discussion, the minister pointed out that the water pollution control boards, set up in all but seven states so far, would in addition to their normal work perform the functions of air pollution control boards under the bill.

Mr. Singh said the Centre had been writing repeatedly to the states where the boards were not constituted yet to bring about their formation.

"This will not only facilitate coordination but also result in economy," the minister remarked.

Another salient feature of the bill was that the central board for the prevention and control of water pollution, established under the relevant act of 1974, would act as the central board in respect of air pollution as well.

The state governments, the minister added, would first declare the air pollution control areas. In such areas, industries specified in the schedule to the bill would have to obtain their respective state board's consent for discharging the emission of effluents from their factories.

While reasonable time would be given for existing industrial units to install the control equipment, any failure to comply with the conditions laid down in the bill was liable to prosecution, Mr. Singh stressed.

The minister also said the state governments, too, would issue necessary instructions to ensure that the automobile exhausts did not exceed the specifications laid down by the concerned boards. The bill, however, would not apply to ships and aircraft.

Mr. H. K. L. Bhagat (Cong-I) asked the government to handle the pollution problem firmly and resist pressures from industrialists who found the law irksome. The boards should be clothed with adequate powers. The pollution of the Juma river should be tackled urgently, he pleaded.

Mr. N. Selvaraju (DMK) also said the bill should be enforced effectively. Pollution had been causing havoc to the productivity and health of the nation.

Mr. Moolchand Daga (Cong-I) drew attention to the loss of crops for the farmers caused by effluents from industries in the rivers. All industries should be compelled to set up effluent treatment plants. Unless the government displayed "seriousness," the bill would become ineffective.

Mr. Subramaniam Swamy (Janata) said his constituency in Bombay was the most polluted area in the country, so much it was known as "Gas Chembur," if not a "gas chamber". This was because of a public sector fertiliser factory, which had violated the municipal laws.

He said the bill was weak towards industrial pollution and would prove to be as ineffective as the monopolies act, with "vested interests" going into action. The punishment provided was "terribly small" for a "serious crime."

Mr. R. K. Mhalgi (BJP), congratulating the government on this "long-desired legislation," said the slogan should be "not industrialisation at any price, but with adequate safeguards."

CSO: 5000

INDIA'S POLLUTION LEVEL STANDARDS TERMED 'IMPRECISE'

Bombay THE TIMES OF INDIA in English 24 Dec 80 p 12

[Article by S. T. Almeida]

[Text] Standards set by the Indian Standards Institution (ISI) to gauge pollution levels from chemical factories are imprecise, according to environment experts.

One of them, Dr. A. K. Ganguli, national fellow on environmental sciences, says the standards need revision as they do not take into account factors like wind patterns, population distribution in the neighbourhood, and other local conditions.

Dr. Ganguli had drawn the attention of the institution to advertisements appearing in newspapers listing average fortnightly emissions of effluents at the Rashtriya Chemicals and Fertiliser (RCF) factory at Chembur. The levels were listed against ISI standards. The advertisements purported to show that the levels were below the limits prescribed by the instruction and, therefore, safe.

Measures Differ

He said the level of pollution at the breathing zone in the public domain was a matter of concern, notwithstanding the standards set by any institution.

The advertisements put out by the RCF did not specify where the monitoring was done, who did it and what kind of network was established to ensure monitoring in the down wind direction.

"Sampling done in the vicinity of a tall stack may often give a lower level for the pollution level than that obtained beyond the perimeter of the installation emitting the pollutants," Dr. Ganguli said.

In the advertisements, the emission values were given in parts per million (ppm), whereas the standards set by ISI are in kg. per tonne of production. It is not possible for the public to relate these numbers to the production of RCF. The factory ought to have given the total releases and total production. Dr. Ganguli stated that the advertisements should have mentioned that the monitoring was done at the point of emission and the total volume of emission should have been given.

Dr. Ganguli contends that the permissible emission standards should be related to the primary requirements of meeting the criteria of acceptability of the

resultant air quality. The ISI standards do not make specific reference to air quality but leave it to other authorities to affix limits depending on the situation.

The ISI manual says: "The emission limits prescribed in this standard (8635-1977) are intended to guide the Central and state governments and other local authorities concerned in framing rules regarding air pollution. In arriving at a decision on the emission limits, the authorities should give due consideration to local conditions and, in special cases, may relax the limits or make them more rigid."

Dr. Ganguli and SOCLEEN (Society for Clean Environment) maintain that the authorities had not considered local conditions because people staying in the neighbourhood of the RCF factory have been suffering for a long time, due to pollution.

The RCF chairman and managing director, Mr. Duleep Singh, insists that pollution caused by his factory is minimal, following anti-pollution measures the establishment has taken. "The problem was never as acute as made out to be," he said.

But SOCLEEN retorts that people in nearby colonies, especially in the Collector's colony, adjacent to the RCF complex, continue to suffer from coughs, eye irritation and lung trouble. There is also the phenomena of defoliation of vegetation around the colony. SOCLEEN recently published photographic evidence of this in its journal SCAVENGER, and the deposition of solid pollutants on roof-tops and streets in the neighbouring areas. Corrosion of structural material has also been noticed in buildings in these areas. The atmosphere in the neighbourhood of the factory is covered by a veil of smoke and smog.

The factory has not yet been able to install an effective machinery to combat particulate pollution. The factory personnel are unable to give the composition of the particulate matter and the size distribution of the particulates.

CSO: 3000

SCIENTIST NOTES HIGH DEGREE OF WATER POLLUTION

Madras THE HINDU in English 4 Jan 81 p 12

[Text] Varanasi, Jan. 3.

The Science Congress President, Prof. A. K. Sharma, today expressed concern at the pollution of lakes in the country and said the Dal Lake in Kashmir would shortly become a "myth" because of the increasing pollution rate.

Introducing the main theme "Impact of the development of science and technology in environment" for discussion at the 68th session of the Indian Science Congress Association (ISCA) here today, Prof. Sharma said the Dal Lake was an example of heavy eutrophication principally due to sewage discharge leading to extensive vegetation and choking at various sites. [as published]

Prof. Sharma said pollution through inorganic effluents was in rapid progress in the Sagar lake dividing Hyderabad and Secunderabad. Due to the growth of industries in and around the lake in the last two or three years, the entire water surface had been polluted with profuse growth of the water hyacinth.

Most Polluted River

Referring to river pollution, he said the Ganga was regarded as the world's most polluted river, while the area surrounding Calcutta on river Hooghly was a major pollution centre.

About 139 industries lined both sides of the tidal river belt. In the 120-km. path from one end of Greater Calcutta to the other, there were almost 270 outlets of untreated water to the Hooghly.

While the Damodar, flowing through the coal belt area in Bihar and West Bengal posed serious problems because of industrial effluents, the Yamuna, the capital's life-line was polluted by DDT factory wastes. "The acidic water is extremely toxic and poisonous and needs at least 8,000 times dilution to eliminate its harmful effects," he said.

About 90 per cent of the drinking water in the country came from these polluted rivers and their tributaries.

The cause of fluorosis in Punjab, Andhar Pradesh, Karnataka and Tamil nadu had also been traced to such human interference with natural systems. Following the

establishment of Nagarjunsagar dam in Andhra Pradesh there has been an increase in molybdenum concentration in soil vis-a-vis in the cereals, including sorghum.

Remedial Measure

Prof. Sharma regretted that in spite of excellence having been achieved in several spheres of national endeavour, in the planning and development projects, "the environment has not so far been considered in its totality."

In his 30 point remedial measure, prof. Sharma stressed the need for enacting legislation and its implementation, covering suitable air and water pollution control.

Young Scientists Receive Awards

Fifteen young scientists, including a woman, today received the Indian National Science Academy (INSA) awards for 1980 from the Prime Minister, Mrs. Indira Gandhi, during the inaugural session of the 68th science congress here. [as published]

The INSA award given to scientists below the age of 32 for their "work of exceptional merit," carries a medal and Rs. 6,500 cash.

CSO: 4220

DELHI OFFICIAL SPEAKS ON SOIL EROSION DANGERS

Bombay THE TIMES OF INDIA in English 23 Dec 80 p 13

[Text] New Delhi, December 22 (UPI).

The country is losing "several tens of thousands of crores" of rupees a year in terms of agricultural, animal and forest production as a result of wind and water erosion over 150-odd million hectares.

"These losses show up unmistakably in the pitiable condition of our poverty-stricken masses," the petroleum secretary, Mr. B. B. Vohra, who is also a conservation expert, said here today while delivering the Patel memorial lecture.

One of the indirect losses of water erosion was reduction of the life expectancy of major and medium irrigation and multipurpose projects on which over Rs 10,000 crores had been invested in the last three decades.

What was "particularly alarming," Mr. Vohra said, was the fact that in most cases there would be no alternative sites for dams once the existing ones were rendered useless because of the high rate of sedimentation. "What is at stake is, therefore, the loss of the irreplaceable potential--for irrigation, electricity and flood control--that these storages represent."

For threat to the hydel potential was a particularly serious matter in the context of deepening energy crisis.

Besides, Mr. Vohra said, soil erosion also caused serious problems of annual floods and drying up of water resources.

Underlying the need for a programme of erosion control, he suggested a minimum outlay of Rs. 15,000 crores for the purpose. This was on a conservative estimate that on an average, Rs. 1,000 would be needed for treating one hectare of land.

Political Will

"Such an investment would certainly be justified if it can be carried out in a manner which is technically sound, and is supported by local communities, as well as by stern political and administrative will."

Mr. Vohra said this was exactly the approach followed by China and South Korea which were "eminently successful" in tackling their problems of deforestation,

denudation and soil erosion on a wide scale. In both these countries, very stern measures were taken, he said, to ensure effective protection to degraded lands. China had placed 55 million hectares under new forests during the last 30 years while in South Korea there was hardly any denuded land to be seen anywhere.

Mr. Vohra said the key to the problem of soil erosion lay in the effective use of adequate legal and executive powers to provide the necessary protection to the land. Such powers must also be used thereafter to ensure that the land was exploited strictly within the limits of its productive capacity and was not allowed to degenerate again. However, the use of legal and executive powers could be effective only if local communities realised that the restraints placed on them were in their own best interest in the long run. There was, therefore, a need to educate and win the cooperation of the affected population and also to find workable solutions to the problem of meeting their fuel and fodder needs.

Besides the problem of erosion, Mr. Vohra said there were also other threats which the soil faced. One of them was the diversion of good agricultural land for urban uses. Since such diversions were irreversible, it was necessary to ensure that wherever possible such urban growth took place only on comparatively inferior soils. The second threat came from continued application of large quantities of inorganic fertilisers and pesticides, thereby depleting the micro-nutrients in the soil. Another threat came from sea erosion as was evident in parts of Kerala.

C50: 5000

LOK SABHA PASSES FOREST CONSERVATION BILL

New Delhi PATRIOT in English 25 Dec 80 p 3

[Text] Contractors would be eliminated altogether from forest operations under a time-bound programme, Union Agriculture Minister Rao Birendra Singh, said in the Rajya Sabha, on Wednesday, reports PTI, UNI.

With support from the Janta Party, DMK, AIADMK and other groups, the House unanimously approved the Forest, (Conservation) Bill, 1980 as passed by the Lok Sabha. [as published]

The Minister told the members that the responsibility to manage forests would be given to State departments.

The Centre had to promulgate an ordinance on the subject to ward off "danger" of State Governments coming under pressure to deforest areas for some other purposes, Rao Birendra Singh stated. [as published]

He also said a comprehensive Bill be introduced in the next session on forest conservation which would also include provisions to promote wild life. [as published]

The House earlier rejected a statutory resolution moved by Mr Pyarelal Khandelwal (BJP) disapproving the ordinance.

The members felt that the measure was necessary to check further denudation of forest areas in the country.

Rao Birendra Singh assured the members that none of the powers enjoyed by the States would be curtailed by this legislation. The tribals also would not be made to suffer.

Members generally shared Rao Birendra Singh's concern over indiscriminate felling of trees and the threat to ecological balance. The Minister said only 75 million hectares of the country's total land area of 329 million hectares was under forests. The Government wanted to bring 33 per cent of the total land area under forests.

CSO: 5000

OECD REPORT ON NEW ZEALAND ENVIRONMENT APPROVED

Christchurch THE PRESS in English 19 Dec 80 p 18

[Text]

NZPA Paris

The Organisation for Economic Co-operation and Development (O.E.C.D.) report on the New Zealand environment has been approved at a meeting of the organisation's environment committee which has just ended in Paris.

The report, which has been sought by the New Zealand Government, will now go to the O.E.C.D. Council early next year for formal approval.

It is expected to be published in March. Its contents will not be released until then.

The Commissioner for the Environment (Mr K. Piddington), who has been attending the meeting, told N.Z.P.A. "Everyone who has seen the draft document is impressed with the way it comes to grips with feeling in New Zealand on the environment."

Mr Piddington said it was evident that the O.E.C.D. work this year would have a significant contribution to environmental issues in New Zealand.

"It will be a basic document for some years," he said.

New Zealand is only the third country, after Japan and Sweden, to ask for an O.E.C.D. environmental review.

An O.E.C.D. team of international experts, headed by a Canadian engineer, Mr James Macneil, visited New Zealand early this year and returned in October with a "synoptic paper" setting out questions on which it wanted further information.

This was discussed with the Minister for the Environment (Mr V. S. Young), senior officials, and members of advisory bodies and non-Governmental organisations.

The O.E.C.D. team split up to visit different parts of New Zealand and also held three public meetings while in the country.

"I think that the members of the review panel met at least 1000 New Zealanders," Mr Piddington said.

"That is an impressive rounding or sampling of opinion."

Among the questions posed by the review panel and answered in the still-confidential report are:

Does the role of the Commissioner for the Environment as a senior public servant advising the Minister conflict with his role as a potential public critic on the environmental aspects of proposals being submitted by development departments or other agencies?

Are there other examples of senior public servants in New Zealand being charged with a dual confidential adviser-public critic role?

Have alternatives to this arrangement been considered?

Are the functions of the various quasi-Governmental, advisory bodies overlapping or complementary — specifically those of the Nature Conservation Council and the Environment Council?

The Nature Conservation Council was critical of the contents of the synoptic paper and in a submission to the review panel it said the council believed the Commission for the Environment lacked effectiveness because it had been unable to clearly establish its priorities and win the respect and support of those whose activities it was intended to co-ordinate.

But Mr Piddington describes this as "an isolated reaction." He said there was "substantial agreement" on the draft conclusions at the environment committee's meeting, chaired by Mr Erik Lykke, of Norway.

"They point out the opportunities we have to maintain environment quality during a period of major industrial and energy development," Mr Piddington said. "I sensed

a lot of good will and support for the care with which the Government has proceeded on environmental impacts.

Mr Piddington said there was interesting discussion in the committee on the position of the Maori people, which was felt to be a special aspect of the New Zealand situation.

Questions such as sea-food resources and water quality were of particular importance to them.

"To my mind, the review panel has come up with a very sensitive set of judgments on what New Zealand is facing," Mr Piddington said.

A number of countries represented on the committee were taking a keen interest in how New Zealand was dealing with environmental issues, he said.

The review covered the specific topics of energy, water, towns and country planning, primary production and institutional arrangements.

Apart from the New Zealand review — its cost is met under the O.E.C.D. Budget — the environment committee discussed a number of other questions at its meeting over the last week.

These included the exchange of information on chemicals, noise, and environmental aspects of energy development.

"What is encouraging from New Zealand's point of view is that they are getting in early to study these issues, which is helpful to us," Mr Piddington said.

The O.E.C.D. has a very professional secretariat and the benefits we are getting from tapping in to their efforts are very considerable.

To the question, "Does the O.E.C.D. report on New Zealand tell New Zealanders anything they do not already know?" the answer of the experts in Paris, quite clearly is, "Yes."

CONSERVATIONISTS SEE MANY THREATS TO ENVIRONMENT

Wellington TUE. EVENING POST in English 2 Jan 81 p 4

[Text]

FRIENDS of the Earth say 1981 will be a grim year for New Zealand.

The group's national organizer, Mr Roger Wilson, says the environment is bound to suffer from the Government's hopes for re-election on a platform of major energy projects.

He predicted that Government moves to streamline the planning process for such projects would see a violent reaction from conservationists.

"We do not for a moment condone violence against people or property, but it is quite clear to us that the Government has no comprehension of the depth of feeling of many conservationists on such issues as the preservation of the environment from the ravages of industrial and hydro-electric development and mining."

Mr Wilson said in a statement.

"If the Government continues to ridicule conservationists' reasoned arguments, and continues to throw legal obstacles in the way of the legitimate dissent and protest, it is inevitable that some of them will resort to more extreme measures."

Recent Government announcements had shown a chronic disregard of environmental considerations, he said.

"Perhaps the most staggering was the announcement by the Minister for the Environment, Mr Venn Young, that the third polline for the Connalco smelter at Bluff would not even have

an environmental impact report done on it.

"Here we have a project that on its own will consume an extra 4 percent of the nation's entire electricity output. To imply that such consumption will have no environmental impact at all is absolutely scandalous."

"Other factors, such as increased emissions of fluorides from the smelter, are obviously of no concern at all to the Government."

The Government was apparently embarking on policies that would see it deciding that the social effects of major industry projects just would not be investigated.

But the Government should be forced to admit publicly that the social well-being of the residents of New Zealand was less important in its view than economic developments that

would benefit mostly foreign companies.

Mr Wilson added: "The dream of being the 'Blue-eyed Arabs of the Pacific' is a myth. The sooner we realize that the Government is destroying the very fabric of our country, the natural environment, in pursuit of this impossible dream, the sooner we can start to look at always of solving our economic problems that are in harmony with that environment."

BIRTH DEFECTS FOUND UNRELATED TO 2,4,5-T EXPOSURE

AUCKLAND THE NEW ZEALAND HERALD in English 29 Dec 80 p 1

[Text]

The army of New Zealand spraying contractors rejoiced last night after a medical survey report said high exposure to the herbicide 2,4,5-T had not affected births in their families.

The survey was done by the Wellington Clinical School of Medicine, with Health Department funds.

It compared more than 1000 births among more than 600 families of spraying contractors with a similar number of births in the families of agricultural contractors who have little contact with the herbicide.

No significant difference was found in the rates of congenital defects, miscarriages or stillbirths.

Dr Allan Smith, of the school's department of community health, said the rate of congenital defects found among chemical sprayers' families was 20 for each 1000 births—a little higher than the agricultural contractor rate of 18 for each 1000 births.

But, he said, there was no

evidence from the study that the difference was related to spraying 2,4,5-T.

He said both these rates were in the range of those reported in other New Zealand studies.

"The results are reassuring, since they are evidence that the use of agricultural chemicals by New Zealand chemical applicators is not having any major effects on reproductive outcomes," said Dr Smith.

However, Dr Smith said exposure to these toxic chemicals should be kept to a minimum and that users should note that studies in Sweden had suggested that some of the chemicals might cause a rare form of cancer called soft tissue sarcoma.

A study was being made to see if a similar association existed in New Zealand.

The birth study findings, which are preliminary and subject to further analysis, were last night described by the head of the medical school department of community health, Professor Kenneth Newell, as "surprising" and "of major international interest."

Professor Newell said the survey was unique in the high level of co-operation received from spraying contractors, who had much to lose, and the willingness to help of agricultural contractors.

Chemical applicators were last night relieved when told of the findings. Mr R. O. Perano, the chairman of the chemical applicators section of the Contractors' Federation, said: "It turned out the way we thought, but it must have some significance to the people complaining about 2,4,5-T."

"Our members handle the stuff more than anybody else. Our ovens are saturated with it and our wives have to wash them. If it was dangerous, it must have showed up in our families."

The Auckland Federated Farmers spokesman on the chemical, Mr H. A. S. Lloyd, said the survey was "most reassuring" to the farming community, who would be in the front line if there was any risk.

He said the findings also confirmed the soundness of

the work done by the Agricultural Chemicals Board to ensure that chemicals used were safe.

But opponents of the herbicide were last night unmoved by the findings.

Dr W. M. Sare, of Te Awamutu, who with his partner, Dr P. I. Farber, first raised the question of a link between 2,4,5-T and birth defects and miscarriages in rural communities, reserved comment until he had seen full details of the survey.

A director of the Environmental Defence Society, Dr Robert Mann, said the survey appeared to have done nothing to dispel the main fear about the herbicide—its effect on the foetus when the mother was exposed to the chemical in early pregnancy.

The interviewed parties exposed to 2,4,5-T had been mainly men and not pregnant women.

Dr Mann said it was "uncontested" scientific fact that animals exposed to the herbicide in early pregnancy were affected and it would be surprising if this did not apply to humans.

PROPOSED SECOND ALUMINUM SMELTER AROUSES CONTROVERSY

Environment Minister's Statement

Wellington THE EVENING POST in English 23 Dec 80 p 9

[Text] The Minister for the Environment (Mr Venn Young) criticised groups suggesting that restrictions will be placed on the role of the Commission for the Environment.

Mr Young said the statement from the Coalition for Open Government, as with previous statements from other groups, suggesting that the Commission for the Environment would be limited in the scope of its environment impact audits, was misinformation of its worst.

"The Coalition's statements are based on partial selective quotations taken from internal Government documents or inspired leaks. These groups seem determined to misconstrue this information for their own

ends." Mr Young said there was no intention to alter the essential principles by which the Commission for the Environment acted or to restrict the commission's involvement in the environmental impact reporting and auditing process.

Regarding the report and audit of the second aluminium smelter, Mr Young said the commission and the consortium had already discussed the procedures to be followed and were in complete agreement.

Environment Commissioner's Stand

Wellington THE EVENING POST in English 24 Dec 80 p 4

[Text]

THE environmental impact report on the second aluminium smelter will be no less comprehensive than previous reports on other large projects, the Commissioner for the Environment, Mr Ken Piddington, said today.

It was not correct to suggest that the scope of the report to be carried out, as is usual practice, by the

scheme's promoters, South Pacific Aluminium, would be limited, he said.

Mr Piddington's assurance came in response to fears expressed at the weekend by the Coalition for Open Government that the smelter's impact report would be the "first victim of the Government's intentions to severely restrict the Commission for the Environment's scrutiny."

The coalition said it un-

derstood officials from Government departments involved in the report, which had urged restrictions for the commission's work, had now combined with the Fletcher consortium to restrict the scope of the report.

Mr Piddington said it was standard practice for the commission to discuss the scope of the report with the proposer of the scheme. This usually led to agreement on

the issues to be covered.

Negligible

Certain aspects would be left out, he said, either because their impacts were negligible, or because someone else was responsible for the environmental evaluation of the work.

"The commission has had a number of meetings with the Fletcher team about the impact report and expects to have further discussions now the site has been decided," Mr Piddington said today.

"The consortium has clearly indicated its willingness to prepare a thorough environmental impact report.

"If, for any reason, the report does not bring forward important information about the environmental implications of the proposal, I have the responsibility to seek further details from the proposer or from others involved in the project," Mr Piddington said.

"In addition, I would comment on any unknown factors in the audit if they

were of environmental significance.

"Under the National Development Act, such comment would also be included in my statement before the Planning Tribunal."

Under that Act, passed last year, the Commissioner for the Environment plays an independent role in both preparing the impact report's audit and in appearing before the Planning Tribunal, in that he or she is not acting under the direction of any Minister of the Crown.

Conservation Group's Criticism

Auckland THE NEW ZEALAND HERALD in English 24 Dec 80 p 5

[Text]

Press Assn Wellington

The Clyde high dam, needed for the second aluminium smelter, was out-and-out vandalism by the state, the Environment and Conservation Organisations have claimed.

In a statement yesterday, the organisations' chairman, Dr Hugh Barr, said that the Clyde dam decision showed the true cost of the second smelter.

"Some people have said they cannot make up their mind about the second aluminium smelter because it

is all economics," said Dr Barr.

"This time it is not just the dollars and cents the smelter will cost us. This time it is a river our grandchildren deserve, this time it is a part of New Zealand's rich natural heritage gone to waste.

"The Clutha won't be the only river taken to feed the smelter. Living rivers will be turned into slack water behind dams the length and breadth of this country."

Dr Barr added: "ECO

urges all New Zealanders to think carefully about the real costs of the second smelter—a project which in any case creates few jobs and is highly questionable, even when considered in the narrowest economic sense.

"Now, how do we build in the cost of our heritage? How can we build in the cost of the Clutha River, the lost apricot orchards, and the Cromwell Gorge? To cost them at nothing as the power planners have done is out-and-out vandalism by the state.

Member of Parliament's Warning

Auckland THE NEW ZEALAND HERALD in English 26 Dec 80 p 1

[Report by HERALD's Wellington Bureau]

[Text] The MP for Hamilton West, Mr Michael Minogue, says moves are afoot to slash the independent watchdog powers of the Commission for the Environment and bring it under ministerial direction.

Mr Minogue fears the moves will reduce environmental impact reports and audits to "propaganda exercises" directed by developers, bureaucrats and cabinet ministers.

And he says the Government has already prevented an environmental impact study from being done on the third potline at Tiwai Pt aluminium smelter.

Dissatisfied

Mr Minogue's warning of moves to restrict the commission's independence comes on top of revelations that a cabinet committee is studying the commission's role and a claim by the Coalition for Open Government that departmental officials had sought a limited scope for the impact report on the Aramoana aluminium smelter.

The Government has become increasingly dissatisfied over the commission's expanding its role into looking at the social, economic and policy issues of major development projects.

The dissatisfaction came to a head when the commission produced a wide-ranging audit on the planned CSR-Baigent Nelson pulp mill. Since then the commission has criticised aspects of the impact report on the Taranaki methanol plant.

Change Easy

This month the cabinet economic committee has studied whether the commission should be limited to examining only purely environmental matters of big projects.

Because the commission works under a cabinet min-

ute and not legislation, the Government could change the ground rules easily merely by altering the minute.

On Monday, the Minister for the Environment, Mr Venn Young, criticised the Coalition for Open Government for suggesting that the commission was being restricted in its study on the Aramoana smelter.

Mr Young said there was no intention to alter "the essential principles" under which the commission acted, or to restrict the process of impact reports and audits.

Developers

But Mr Minogue says he understands that an officials committee has recommended that the form and content of future environmental impact reports be determined by a committee of Government officials which would be subject to ministerial direction.

Impact reports are prepared by developers of a project, and the commission "audits" the reports.

Mr Minogue said the same committee of officials would also fix the terms and content of the commission's audit.

"Clearly," he said, "this will provide a means of circumventing the express provision in the National Development Act freeing the

commission from ministerial direction.

"Instead, the commission would get its direction from a committee of officials who were subject to ministerial direction."

[On Sunday, the Coalition for Open Government claimed that officials from three Government departments had tried at a meeting on December 8 to influence the terms of reference for an impact report for the Aramoana smelter. The Government has not denied that the meeting took place, or that the officials were present.]

The proposals under study would "effectively remove whatever initiative or independence" the commission had, Mr Minogue said.

It was questionable, anyway, whether the commission had the resources and staff to perform its functions adequately with so many big projects already in the pipeline.

"Purely by depriving it of necessary resources, its effectiveness can be so comprehensively restricted that, far from being a guardian of the public interest, he [the commissioner, Mr K. W. Piddington] becomes another 'straw man' in the political system."

Mr Minogue said the commission might already have sunk to that, because he understood it had been told by the Government that so

formal impact report or audit would be prepared for the third potline at the Comalco aluminium smelter at Tiwai Pt, near Bluff.

"What is really involved is a massive public information issue," said Mr Minogue. "Is the public entitled to be reasonably well informed through environmental impact reports and audits or not?"

Entitled

"If these sources of information are to be controlled in the manner suggested, the public will be reduced to accepting propaganda exercises originating from developers, bureaucrats and ministers of the Crown."

Mr Minogue said the public was entitled to adequate information about major developments which affected the economic, social and physical environment of the country.

"It has hitherto been assured that it would receive this information through impact reports and audits and the office of an independent Commissioner of the Environment. That assurance now looks very hollow."

The simple question, said Mr Minogue, was: Were bureaucrats, developers and the Executive to be subject to a reasonable standard of public accountability or not?

Environmental Impact Report

Auckland THE NEW ZEALAND HERALD in English 26 Dec 80 p 1

[Text]

The Minister for the Environment, Mr Venn Young, last night confirmed it had been decided not to have an environmental impact report for the third Comalco potline.

"An impact report was at one stage considered," said Mr Young, "but the matter was discussed between the

Government and the company, and it was pointed out that the third potline was always part of the original smelter proposal and there was no specific planning required for it."

Mr Young said the third potline was not a new project. Comalco had to apply

only for the renewal of a water right.

"Mr Minogue complained about this some time ago and I invited him to bring it up in caucus, but he did not."

Mr Young said some decisions had been made on a recommendation of an official committee on the role of the commission.

Some matters will had to be resolved, he said. If major changes were decided, the matter would go to the Government council early next year and a public announcement probably would be made.

"There is no suggestion that the commission's independence will be interfered with," said Mr. Young. "What has taken place is that we are looking at a clearer definition of terms of reference. The commission should consider in an impact report."

Mr. Young said the commission got into the field on an overseas investment, and quite wide of environmental matters in its audit of the CERN-Rangitapu pulp mill proposal.

"So we had to define the role of the commission in these things."

The National Development Act stated clearly the commission must act independently of ministerial direction. Mr. Young said if the commission felt there was insufficient matter in an impact report, "there is nothing to stop it saying so in the audit."

LEGISLATIVE, ECONOMIC CONTROLS NEED TO STEM POLLUTION

Beijing RENMIN RIBAO in Chinese 10 Nov 80 p 5

[Article by Yi Zhi (2496 0037): "Protecting the Environment, Bringing Benefit to the People"]

[Text] Environmental protection is an important measure for safeguarding the health of the people and the survival and propagation of the nation. Today, environmental pollution and the destruction of natural resources have become quite serious, even though we have barely begun our modernization construction and our industrial foundation is still pretty weak. Reflecting the demands of the people, the delegates to the Third Session of the Fifth National People's Congress voiced their grave concern about this problem and advanced some excellent suggestions. Our task now is to proceed unrelentingly to carry out environmental protection work well.

I.

Now, more and more comrades are concerned about environmental protection. Senseless attempts to stockade lakes to build arable land and the destruction of vegetation to reclaim wasteland, [activities] which disrupt the natural ecological balance, have practically been put to an end. Cities, rivers, and harbors which have been seriously polluted by wastewater, waste gas, and waste residue are beginning to show improvement after proper treatment. Some cities are moving out factories which seriously pollute the environment. But in spite of these promising signs, the problem of environmental protection on the whole has not yet drawn the attention of the economic departments and cadres at all levels. Environmental deterioration has not yet been brought under control.

According to comparable data of 14 provinces, municipalities, and autonomous regions, the volume of the "three wastes" has been continually increasing during recent years, making pollution even more serious. Today our country ranks first in atmospheric pollution from the discharge of toxic gases such as sulfur dioxide. The number of cities affected by atmospheric pollution jumped from 18 in 1978 to 22 in 1979. According to state regulations, the volume of dust per square kilometer in any city should not exceed 6-8 tons per month. However, as monitored in March a year ago, the volume was 39 tons in the residential areas of Beijing and 285 tons in the vicinity of Capital Steel. In some industrial cities the total was as high as 500, 600, or over 1,000 tons--more than 100 times the statutory ceiling. Some cities are so full of smog that one hardly see clear sky all year round, and the sun looks as

dim as the moon. In other cities one often runs into flocks of white sheep and colorful sparrows practically dyed black. In 1979 there were 850 rivers polluted by more than one toxic substance, 230 of them more seriously. The subterranean water in more than 40 cities has been so polluted by such toxic chemicals as phenol, cyanogen, and arsenium that some of them simply do not have any clean water and the people have to use dirty, smelly water about one-third of the time throughout the year. The noise level as monitored in nine cities, including Beijing, Shanghai, and Tianjin, exceeds 80 decibels (it should be under 50 decibels for human comfort), much noisier than New York, London, or Tokyo.

Environmental pollution poses a serious threat to the health of the people. The incidence of disease due to environmental pollution in many cities and industrial and mining areas has increased markedly. Deaths due to cancer have increased 1.45-fold in 30 years for the whole country. Due to its more rapid spread in recent years, cancer has become the second most vicious killer. Prolonged exposure to polluted drinking water, grain, and vegetables in some localities has led to an increasing number of chromosome deformity, genetic degeneration, fetal deformity, and retardation. We must not take lightly these signals of nature which affect the physical well-being of our future generations.

Environmental pollution has caused heavy losses to farming, forestry, animal husbandry, sideline production, fishery, and industry. The cumulative pollution of some 400,000 mu of farmland in the suburbs of Tianjin over a period of 7 years, from 1973 to 1979, is responsible for the loss of 60 million jin of grain and 2.5 million jin of vegetables. Some localities in South China, once known as "the land of fish and rice," have been rendered practically barren by serious pollution. Disputes between local residents and peasants on the one hand and factories on the other concerning pollution have been multiplying, along with increasing damage payments borne by the factories. Subterranean and surface water contaminated by the pollutants from one factory leads to accelerated corrosion of equipment, clogging of pipes, and buildup of boiler deposits of another. This is a great loss to industry as a whole.

In addition to pollution by the "three wastes," a more serious and far-reaching cause of environmental deterioration is the irrational use of natural resources, leading to the disruption of the natural ecological balance. We are one of the world's least forested countries, and yet the destruction of our limited forest resources goes on unabated. Although we add 1.4 million hectares of forest land each year, we deforest 2.5 million hectares of afforested land each year by felling trees, destroying forests to reclaim wasteland. Forest fires also contribute to deforestation. Some 27,000 square kilometers of land have become desertified over the past 15 years. One-seventh of the grassland of North China has been desertified and alkalinized, and the amount of dry grass produced has slipped from the amount produced in the 1950's by 30 to 50 percent. The reduction is as much as two-thirds in some areas. Over 20 million mu of lakes and ponds, about one-tenth of all inland waters, have been stockaded and filled up to build arable land. The meteorological, hydrological, and soil conditions in many localities have deteriorated so much that the incidence of natural disasters has increased markedly. An annual average of 300 million mu of land suffered natural disasters between 1950 and 1958. The annual average of land visited by natural disasters, mainly drought, jumped to more than 500 million mu between 1972 and 1977. Many localities in South China, where "two days out of three are rainy," have been plagued by drought 2 years out of every 3.

Environmental pollution and destruction of natural resources pose a very serious ideological problem: We do not have a clear understanding of the objectives of socialist production when we pursue production and construction.

Instead of producing for production's sake, socialist production aims at meeting the ever-increasing cultural and material needs of all members of society. It brings benefits rather than calamities to the people. But our pursuit of high quotas, increasing productivity, speedy change of the face of the country, and overtaking other countries in a given number of years have led some leading cadres to concentrate on immediate output without considering its environmental impact, and even to sacrifice environmental benefits in order to achieve greater productivity. They do not study how to prevent pollution when they plan to increase production. Nor do they include antipollution installations in the construction of new production facilities. When they utilize, overhaul, or renovate the outmoded enterprises, they do not try to tackle the problem of environmental pollution left behind by those old enterprises. In their study of industrial technology, the focal point is to develop the kind of technology which leads to more variety, bigger volume, and better quality of products without developing corresponding antipollution measures. When they develop natural resources, their emphasis falls on the exploitation of what is plentiful and easily accessible, and very little attention is directed to the maintenance of the natural ecological balance. Their evaluation of cost-efficiency is based entirely on profit and output, and awards invariably go to those units which have achieved their quotas, no matter how much damage they have done to the environment and natural resources. The State Council has pointed out repeatedly that the designing, building and commencement of operations of all engineering projects—including new projects, renovations, expansions as well as the utilization or overhauling of outmoded enterprises—and of their antipollution facilities must begin simultaneously. As a matter of fact, very few of the large and medium-scale projects which go into operation each year have complied with the "three simultaneousities." The compliance rate was 44 percent in 1977, 41.5 percent in 1978, and 39 percent in 1979. Many projects simply do not take into consideration the treatment of the "three wastes" and regard the environment as a free dumping ground for wastes. Some localities and outmoded enterprises which press for more and more state environmental protection grants often divert these funds to capital construction and other undertakings instead of spending them on environmental protection. In some cases, the antipollution facilities already included in the construction projects are cut back to make funds available to ease the investment squeeze of the major projects. Some units simply do not use the antipollution facilities that have already been built, because they find it much easier to let the pollutants escape. These practices of concentrating on production without caring about environmental protection, bringing benefits while discharging toxic substances, actually work against the objectives of socialist production.

By environment we mean both the virgin natural environment and the improved natural environment, the totality of the forces and the impact of nature on the human race or the basic material conditions of our production and livelihood. All materials required for social production, including raw materials and fuel, come from the environment. All the waste resulting from the production process and from human life return to the environment. This exchange of materials between human society and its environment goes on all the time. When people used simple tools to produce

on a family scale, the impact on the environment was minimal. The exchange of materials between the human race and nature becomes more and more complex and its impact on environment more and more far-reaching with the emergence of big industries and the ever-expanding scale of social production. So we must study the responses of nature whenever we make any move to develop production and tamper with nature. After all, our modernization programs are meant to bring benefits to the people and to future generations.

As the incidence of environmental pollution has proliferated since the beginning of the present century, many countries have lived through crises. In 1970 the Japanese held a month-long "environmental pollution congress" or "special congress on environment" to cope with the problem of environmental pollution. The capitalist countries always take a roundabout way to look after their environment. They "do not seek solutions until the environment is polluted." Having sustained deforestation and serious "environmental pollution," they are forced by widespread mass antipollution drives to pay an extremely high price to resolve their environmental problems. Being a socialist country, we should surpass the oldtimers and not repeat the mistakes of the capitalist countries. Consequently, we must have a high degree of ideological awareness of the need to protect the environment, and we must resolutely rectify the erroneous practice of developing production to the detriment of environment and the health of the people.

The development of production and the protection of the environment actually has identical objectives and complement each other. In his analysis of industrial waste, Marx pointed out that a large part of this waste, "except for real waste," actually is a "new means of production to the same industry or another industry." ("Complete Works of Marx and Engels," Vol 25, p 95) Many components of the environment are valuable economic resources required for modernization construction. The so-called "three wastes" are not wastes at all. They are regarded as wastes mostly because our scientific and technological level is so low that we either overlook them or do not know how to utilize them. Today, we consume practically the same amount of energy as Japan, but our total industrial output value equals only one-fourth that of Japan. The energy utilization ratio in both the United States and Japan is over 50 percent, while ours is only 28 percent. Even if the ratio were 40 percent, we still would be wasting over 100 million tons of fuel every year and turning it into "waste gas" to pollute the atmosphere. Every year we use over 10 million tons of coal for coking and discharge 3 billion cubic meters of gas into the atmosphere; this is 10 times the amount of gas used in Beijing. In smelting nonferrous metals, the escaped sulfur dioxide is a serious pollutant of the atmosphere. This chemical, if collected, would amount to hundreds of thousands of tons of sulfuric acid per annum. The caustic soda which escapes with wastewater from papermills into the rivers every year is one-third of the amount of caustic soda produced in our country. About 70,000-80,000 tons of petroleum have spilled into the Bohai and Yellow Sea each year since 1974, posing a serious pollution problem to a number of coastal areas. Serious environmental pollution means serious waste of natural resources and energy. Antipollution and environmental protection stand for maximum utilization of natural resources and energy, an important measure to increase production and practice economy.

In terms of management, the most important point is to incorporate environmental protection into the national economic development plan and place it under the economic management system so as to maximize the utilization of natural resources and energy, eliminate pollution, and protect the environment.

Serious environmental pollution and the destruction of natural resources reflect a serious dislocation between man's activities and his environment, and a serious disruption of ratios of the entire national economy. Our emphasis on comprehensive balance includes not only the balance between consumption and accumulation, that between agriculture, light and heavy industry and within the various sectors, and that between finance, credit, goods and materials and foreign exchange, but also the balance between production, construction, and the environment as well as that between the consumption and reproduction of natural resources and between the utilization and supply of natural resources. At present the state has begun to formulate the 1981-1990 developmental plan and the Sixth Five-Year Plan. We must see to it that environmental protection is given the position it deserves.

To make environmental protection an integral part of the state plan is an objective requirement for achieving a comprehensive balance of the national economy. The balance between the scope of production and construction on the one hand and the tolerance of the environment on the other, as well as that between the consumption and reproduction of natural resources, are objective factors that are always present in the development of the national economy. They must be carefully considered when we draw up our plans. The dislocation of the ratios between the various sectors of the national economy are easy to rectify, provided we take all proper and necessary measures. Serious environmental pollution and serious disruption of the ecological balance of nature, however, are difficult and sometimes impossible to restore. So we must not try to develop production to the detriment of the environment. The socialist economy is a planned economy, and the best way to insure spontaneous preservation of these two lines of balance is to incorporate environmental protection into the state plan. Today we face many cases of serious environmental pollution by both large and medium enterprises, and it costs too much to rectify them. Only by making the program an integral part of the state plan can we be sure of the investment, equipment, and labor force needed to achieve genuine environmental protection. Otherwise, the program is just idle talk.

Pollution must be controlled, but control alone is not good enough. It is even more vital to prevent the emergence of new sources of pollution. Because of pollution control, the amount of pollutants in Shanghai decreased last year by 1 percent from that of the preceding year, but the amount of new pollutants was up by 3.5 percent for the same period. In recent years, the chemical industry of Liaoning Province has cleared over 20,000 tons of pollutants but has generated over 40,000 tons of new pollutants. Control without prevention will not do the job, no matter how sophisticated the control technology. The key to pollution prevention at its source lies with capital construction. From now on, approval of a capital construction project should be based on a careful investigation and evaluation of its impact on the environment. Factories which pollute the environment should not be erected in densely populated residential areas, windward localities, or the headwaters and upper reaches of rivers. The "Environmental Protection Law of the People's Republic of China" (provisional) provides that every industrial project and its environmental protection facilities are to be designed, built, and put to use simultaneously. We must act in accordance with the law.

Our existing environment management is generally based on administrative procedures rather than on the economic interests of the enterprises, especially the economic interests of those related to the enterprises. Many enterprises are not held responsible for discharging environmental pollutants. Some enterprises which have antipollution facilities and apportion the operating expenses to the cost of their products actually earn less profit because of the higher costs. This has led to extreme unfairness. An enterprise which discharges pollutants willfully is rated an advanced enterprise because it operates at a lower cost and earns more profit and bonuses. On the other hand, an enterprise which works actively to control pollution and protect the environment is often criticized by the departments in charge because it operates at a higher cost and earns less profit and bonuses. Under the existing system, an enterprise which pays fines or damage for the willful discharge of pollutants is allowed to report the fines and damage as a business expense, but it is not provided with funds to control pollution. We must change those practices that are not conducive to environmental protection. When we assess the economic efficiency of any construction project, we have to look at the economic consequences both within the factory and for society at large. We must reward environmental protection and antipollution practices and extend bonuses to those enterprises which turn out products made of wastewater, waste gas, and waste residue. We must do away with the phenomenon of "providing funds to bury the dead but not to buy medicine for the sick." For the past year some 10 provinces, such as Shanxi, Liaoning, and Hebei, and scores of regional and municipal governments have enacted local legislation based on the State Environmental Protection Law to charge fees of any enterprises which discharge more pollutants than the maximum permitted by the state. The result has been quite rewarding. As attested by experience, these legislative and economic measures to strengthen environmental management, encourage pollution control, and bring benefits to the people ought to be popularized and improved in the light of our total experience. We must reinforce the environmental protection law and enable the arbitration of environmental disputes to work successfully. Any unit which causes serious pollution should be ordered to bring it under control within a specified period of time. If it then failed to make amends within a reasonable time, it would be suspended from production operations, pending completion of pollution rectification, and its leadership would be fined or face legal sanctions for more serious violations. We must support the masses in prosecuting any enterprise or individual that pollutes or destroys the environment, and in struggling against unlawful acts that harm the people's health, willfully discharge toxic substances and seriously pollute the environment.

Our country is beautiful, and we must make its landscape even more picturesque.

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CSO: 5000

CONFERENCE ON PROTECTING NATURAL ENVIRONMENT, NATURAL RESOURCES HELD

Chengdu SICHUAN RIBAO in Chinese 22 Sep 80 p 1

[Text] The first National Natural Preserves Regionalization Work Conference opened on the 16th in Chengdu. On the 22nd, the deputy chairman of the state's Agricultural Committee, Comrade He Kang [0149 1660] delivered a report and the Deputy Minister of the Ministry of Forestry, Comrade Tang Ziqi [0781 1311 1142] summarized the work of the conference to bring it to a conclusion. Afterward, the delegates were to go to Wolong Natural Preserve of this province [Sichuan] to observe and study.

This conference was called by the Natural Preservation Special Team of the National Agricultural Natural Resources Survey and Agricultural Regionalization Committee, with the approval of the committee. More than 170 persons attended, including representatives of scientific and educational units and comrades in charge of related departments.

At the conference, the spirit of this year's Second National Conference of Agricultural Regionalization was conveyed, and experiences were exchanged. The delegates listened to the speeches delivered by the scientists and formulated the preliminary draft of the National Natural Preserves Regionalization Plan. This plan increases the number of natural preserves in China from the current 70 to 300, and the area from the current 1.7 million hectares (0.17 percent of the territory of the country) to 90 million hectares, or 1 percent of the land of the country. The preserves in Sichuan Province will increase from 0.8 percent to 1.8 percent of the territory of the various provinces.

At the conference, the scientists and delegates loudly proclaimed that protection of the natural environment and of natural resources is a matter concerning the state, the nation, and future generations. Leaders of all ranks, all departments, and all of society must pay attention to this. They believe that to do a good job of natural preserve regionalization and management is important for protecting the state's natural environment and natural resources, and especially in rescuing and preserving some endangered biological species. This measure has an important function in developing scientific research, extending reasonable utilization of natural resources, monitoring the effects of human activities on nature, and promoting production, culture, public health, and tourism. Internationally, the ratio between natural preserves and the territory of a country is often used as an index to measure that country's level of development in protecting nature and natural resources. In some countries, the area of natural preserves amounts to more than 20 percent of that

country's total area, while generally it usually amounts to about 4 percent. It is 21 percent for Japan, 9.4 percent for the United States, and 6.1 percent for Thailand. In China's 20 provinces and regions, about 70 natural preserves have been established. These have contributed to the protection of some typical and representative natural ecological systems and some rare animal and plant resources, to the development of scientific research, to water and soil conservancy, and to the nurturing of sources of water. The interference and destruction of Lin Biao and the "gang of four" and the numerous problems in management work, however, resulted in serious damage to many natural resources. These natural preserves are too few in number and too little in area. The arrangement is not reasonable, either. Aside from the forest ecological systems, other ecological systems and historical relics are basically not classified. Especially, there is very little consideration of the ecological systems of grasslands, deserts, waters, marshlands, and seas. Thus, they are far from meeting the needs of the four modernizations.

In order to change this deficiency, in 1979 the Ministry of Forestry, joined by the Chinese Academy of Sciences and the Environmental Protection Leadership Team of the State Council, sent invitations to related departments to carry out special research on the management, regionalization, and scientific investigation of China's natural preserves. This year, the National Agricultural Regionalization Committee resolved to establish a special natural preservation team, to be led by the Ministry of Forestry and participated by all related departments, to carry out jointly the work of natural preserves regionalization and scientific investigation. The regionalization plan formulated by this conference assigns all suitable areas into various types of natural preserves of different characteristics to form a national natural preserve network of a representative characteristic. In the future, these preserves will be established step by step as the conditions permit for the four modernizations and the welfare of mankind and future generations.

At the conference, the scientists and delegates also presented various proposals, including the establishment of special natural preservation teams, under provincial, municipal, and autonomous region agricultural regionalization committees, to be in charge of organizing and coordinating the work of natural preserve regionalization and scientific investigation.

6168
CSD: 5000

IMMEDIATE ACTION ON HAIHE'S POLLUTION URGED

Tianjin TIANJIN RIBAO in Chinese 10 Jul 80 p 1

[Article by Rou Hengxiang [2677 1854 4382] of Water Supply and Drainage Teaching and Research Office, Tianjin University]

[Text] Haihe is the major source of water for Tianjin City. In recent years due to insufficient protection of sources of water, Haihe has been seriously polluted. In March 1974 the author and colleagues carried out a survey analysis of the current condition of the Haihe's pollution and wrote a report on the study, but the "gang of four" did not care about the life or death of the people; the survey report was treated as a piece of wastepaper and served no function at all.

The Haihe has been polluted from the upper reaches down while the pollution actions of some factories of Tianjin are even more serious. For example, the water coming from the Qujiadian of Beihunhe [the North Canal] in the upper reaches is a light brown color with an oxygen consumption rate of 12.14 mg/l and an ammonia nitrogen value of .25 mg/l, exceeding the state's standards in both cases. The toxic mercury content is .009 mg/l, 8 times the standard of the state. Cyanide, arsenic, phenol and chromium have all been detected from chemical analyses of the water of Xihe and Nanyunhe [the South Canal]. Such toxic substances as cyanide, arsenic, phenol, mercury and chromium have been found in Nanyuanhe at the point where it converges with the Wuhe from Sanyuancun to Sanchakou. Even at the entrance of the largest water supply plant of Tianjin, the Jiyeuan Water Plant, a mercury content of .018 mg has been detected, 17 times that of the standard. Along the banks of the Haihe, 25 factories were randomly taken for testing and toxic substances were found in the waste water discharged by all these factories into the Haihe. These pollutants cannot be removed by the techniques of coagulation, sedimentation, filtration and disinfection, commonly employed by existing water supply plants and all these pollutants affect the health of the people of Tianjin.

The author personally believes that efforts should be made in the following three areas to formulate the regulation of water supply currently being contemplated.

(1) Protection of the sources of water: There should be a plan to treat the wastes of these factories that are polluting the Haihe to remove the source of these pollutants as fast as possible in order to guarantee the quality of water of the Haihe and effective measures should be formulated to afford legal protection to the water source of Tianjin City. (2) The currently used ordinary techniques cannot be adopted to treat the seriously polluted water of the Haihe. Efforts must be applied in deep treatment. At present, there is yet no precedent in China in deep treatment of urban water supply but such treatment has been adopted in foreign countries. (3) Sources of water must be urgently developed. On the one hand the problem of insufficient water sources may thus be resolved and at the same time, the Haihe may also be transformed from a "dead river" into a "live river" by improving the quality of its water.

PLANT POLLUTION PROBLEMS DISCUSSED

Tianjin ZHIWU BAOHU [PLANT PROTECTION] in Chinese No 1, 8 Feb 80 pp 22-25

[Article by Fan Defang (2868 1795 2455), Zhejiang Agricultural College: "Prevention and Control of Farm Products by Agricultural Chemicals"]

[Text] Since the properties of some agricultural chemicals are quite stable, spraying them on field crops to prevent or control diseases and insect pests or weeds may lead to direct contamination of the crops or to environmental pollution. Agricultural chemical residue in some farm products produced chronic toxicity in experimental animals, thus creating a problem with residual toxicity of agricultural chemicals. Along with the widespread use of agricultural chemicals has come increased concern about the residual toxicity of agricultural chemicals.

Most agricultural chemicals are toxic in some degree to man and animals. Agricultural chemicals with unstable properties, however, easily dissolve in water and lose their effectiveness, or when exposed on crops to the natural environment, they readily deteriorate in the sunlight or from atmospheric oxidation. Alternatively, they may be catabolized within the plants, thereby losing their toxicity. When these things happen, the problem of their residual toxicity is not at all a prominent one.

In agricultural chemicals with fairly stable properties, the problem of residual toxicity is quite a serious one. For example, agricultural chemicals, both organic and inorganic, that contain heavy metals such as lead or mercury do not lose these elements when they are catabolized or decompose, and they remain either in the plants or in the environment, and they can produce cumulative poisoning of people or animals. So if they are used in large quantities or over a long period of time, they may pollute the natural environment and contaminate farm products. The "Mizumata Sickness" in Japan was brought about by the contamination of fish species with microscopic quantities of mercuric pollutants in industrial waste water. There have been reports of improper application of agricultural chemicals containing mercury such as Ceresan [phenol mercury acetate] poisoning people and animals, and this situation cannot be ignored.

Agricultural chemicals containing arsenic are also generally considered to be fairly stable, posing a problem of potential residual toxicity. As a result of several years experiments and a general survey of residual quantities of arsenic

in paddy rice in the areas of application, it seems that when used as directed, organo-arsenic chemicals (daojiaoqing [4470 5183 7230] and daoning [4470 13801]) for the prevention and control of sheath and culm blight of rice pose no particular problem for residual arsenic toxicity in the rice.

Organo-chloride agricultural chemicals such as DDT and 666 [benzene hexachloride] do not readily decompose inasmuch as their properties are stable, while at the same time they are very readily fat soluble, and thus can be easily accumulated in the bodies of man and animals. They possess high residual toxicity. Naturally, this does not mean that the residual toxicity of all organo-chloride agricultural chemicals is great. For example, the organo-chloride insecticides "Yiditi" [phonetic, possibly IDT], and "Saiditi" [phonetic, possible, CDT], which are similar in molecular structure to DDT, may be acted upon within the bodies of organisms by multi-functioning oxygenase to become polar compounds and be flushed from the system without accumulating in fatty tissues.

Additionally, different isomers of the same agricultural chemical may not exhibit the same degree of residual toxicity owing to differences in properties. Industrial 666 has eight different isomers of which, A, B, C, and D are the principal ones, and only C acts as a fairly strong insecticide, but in industrial products, the A isomer is predominant with B and C being about equal. It is the B isomer that accumulates most strongly in the bodies of organisms, with A being second, and with C being broken down and losing its toxicity fairly rapidly. Thus in 666 or in Lindan [2651 0030], which are produced with a large amount of C isomer in them, the problem of residual toxicity is not a prominent one.

Generally speaking, organo-phosphate agricultural chemicals and those of the carbamate type possess properties that are greatly dissimilar in stability to the organo-chloride agricultural chemicals. For example, agricultural chemicals containing lead, arsenic, copper, and mercury have a half life in the soil of from 10 to 30 years, while that of organo-chloride agricultural chemicals is from 2 to 4 years, and of organo-phosphate agricultural chemicals only several weeks or months. Those of the carbamate type have a half life in the soil of only between 1 or 2 weeks to a month or so, thus their possibilities for causing residual toxicity are somewhat small.

Though properties of some agricultural chemicals may be extremely unstable, the impurities they contain or their products on decomposition may cause extraordinary biological reactions in higher organisms, and they pose problems in residual toxicity. The herbicide 2, 4, 5 D is one such example. It has a half life in the soil of about 5 months (some reports have said 1 to 4 months) because it contains impure chlorodioxyl, an agent in causing defects [3048 0108 0059 088C 0936 5174 5268 3982]. Urethane disulfate bactericides such as Zineb, Maneb, and Naneb have been reported under certain conditions as having generated ethylene thiourea. Tests with animals have shown this compound to be a carcinogen. But inasmuch as ethylene thiourea is unstable, it easily decomposes, and in normal use, the amount of it that is generated is fairly small. Thus, under controlled conditions of use, it is not necessarily an extremely dangerous chemical.

Because of certain of their properties, some agricultural chemicals exhibit fairly great residual toxicity. This is a shortcoming in the use of agricultural chemicals. Nevertheless, because of the numerous kinds of agricultural chemicals, the wide areas they are able to control, the quickness of their results, and the relative ease with which their quantities and qualities can be controlled, they serve an active function in both safeguarding and increasing the output of crops. As a result, agricultural chemicals will continue to see development; however, it is necessary to bear in mind the problem of residual toxicity that may appear, taking different actions to meet different situations, thereby preventing contamination by agricultural chemicals.

How to prevent contamination from residual toxicity in agricultural chemicals, put briefly, has the following aspects:

(1) **Sensible use of Existing Agricultural Chemicals.** This is a matter of how, given the properties of existing agricultural chemicals, and the laws of the growth and development of diseases, insect pests, and weeds, to sensibly use the chemicals in the minimum amounts to achieve the maximum effects in prevention and control. By so doing, the chemicals can both be used economically, and pollution of farm crops and the environment can be reduced.

Sensible use of chemicals consists principally of the following:

1. Spread of knowledge about agricultural chemicals, so as to be able "to use the medicine that fits the disease," rather than using chemicals recklessly. The properties of various agricultural chemicals differ; thus the objects to be prevented and controlled differ too. Even when using the same chemical, a different effect may occur in the prevention and control of various kinds. Take insecticides for example. Because of the different properties of insecticides, such as how strong their action can be, whether they are readily soluble in water, how well they are able to penetrate the tissue of crops or the walls of insect pests, and their stability in different environments, etc., different effects may occur. The effects from use of 1605 in the control and prevention of rice stem borers [*Tryporyza incertellus* Walk] in the Hangzhou-Jiaxing lake area was better than use of methyl base 1605, while its use in prevention and control of another kind of rice stem borers [*Chilo suppressalis* Walk] was not as effective as with 1605. Possibly this had something to do with the stability of the chemical solution, the solubility, or the destructiveness of the insect pests. The ova of *Tryporyza incertellus* Walk hatch continuously, and once the adults hatch, they immediately bore into the rice stems to do damage; therefore application of 1605 with its fairly long residual effectiveness shows rather pronounced control results. Methyl base 1605's properties are not as stable as those of 1605, and its residual effectiveness is also somewhat shorter. Its period of half life on rice leaves is approximately one-half that of 1605, so it cannot match the effectiveness of 1605 against *Tryporyza incertellus* Walk. A characteristic of the occurrence of *Chilo suppressalis* Walk is that after the adults have been hatched, they first congregate at the leaf sheaths where they cause damage, causing discoloration of the leaf sheaths. Methyl base 1605 is from two to three times more water soluble than 1605; when used to prevent and control *Chilo suppressalis* Walk, it penetrates more readily and shows results more readily. Consequently, finding the characteristics of each kind of agricultural chemical and each kind of insect pest, and matching the medicine to the

ailment both yields ideal results in prevention and control, and can diminish pollution of crops and of the environment by the agricultural chemicals.

Furthermore, selection of different methods of application of chemicals on the basis of the form of damage caused by disease or insect pests is also a major ingredient in rational use of agricultural chemicals. The ways in which insect pests cause damage differ, so it is necessary to consider rational ways of applying chemicals. For example, use of non-systemic contact insecticides such as Malathion to prevent and control insect pests with tiny piercing and sucking mouths such as leaf hoppers [Cecadellidea] requires a high performance spraying device that sprays the chemical in fine droplets and evenly.

2. Attention to strength and quantity of chemicals, and mastery of correct application of chemicals. A survey shows that in most parts of Zhejiang Province, chemicals are applied at too great a strength and in too small a quantity. Despite application of quite a bit of chemical per mu of fields, results are not good because the spray has not gotten deep down in the plants, and pollution of the fields is thus increased.

3. Increase effectiveness of chemicals while cutting quantity used. Improve the properties of agricultural chemicals, particularly by combining surface active solutions with improvements in the spreading characteristics of liquid chemicals; improve the quality of chemical applications; and improve performance of devices used to apply chemicals. These measures would increase the effectiveness of prevention and control of diseases and insect pests, reduce the quantities of chemicals used, or decrease the number of times of application of chemicals. They would also decrease pollution by agricultural chemicals.

4. Sensible mixing of agricultural chemicals. By mixing together two or more kinds of chemical solutions, control of some diseases and insect pests can be doubled or more than doubled, and the effectiveness in prevention and control may sometimes be increased. This is an advantage derived from the mixing together of agricultural chemicals. But unless one has a clear purpose in mixing them, mixing them willy-nilly not only increases the cost of using chemicals and wastes chemicals, it also creates environmental pollution. Thus, one must consider the desired effect when mixing chemicals for use.

5. Rational compounding of agricultural chemicals. Agricultural resource companies everywhere scientifically blend agricultural chemicals to match the occurrence of diseases and insect pest infestations in their local areas, to avoid their indiscriminate use, and to reduce pollution. Particularly in some areas where agricultural chemicals have already occasioned pollution or where insect pests have already become resistant to them, strict controls must be exercised.

(2) Safe Use of Agricultural Chemicals.

Formulation of some rules and regulations for the safe use of chemicals is also an extraordinarily important measure for the prevention of pollution by agricultural chemicals. Pertinent rules and regulations may be summarized as follows:

1. Formulate the permissible extent of use of agricultural chemicals after making a general survey of the residual amounts of agricultural chemicals found in crops, in foodstuffs, and in the natural environment, and after a study of chronic toxicity for man and animals resulting from agricultural chemicals. In carrying out an investigation of pollution of the environment, crops, and foodstuffs by agricultural chemicals, it is sometimes necessary to check the natural background occurrence of chemicals as well.

2. Understand the toxicity of agricultural chemicals for man and animals, prescribing the allowable daily index (ADI) for each agricultural chemical, and also prescribing the maximum allowable residual amounts of agricultural chemicals in various crops and foodstuffs on the basis of the eating habits of people. The government should set up an organization for monitoring to prevent contamination of foodstuffs by agricultural chemicals.

3. Understand the behavior of agricultural chemicals on crops, formulating safe waiting periods for chemical applications, and limiting the interval between the final application of chemicals and the harvesting of the crops. This is commonly termed the safe interval.

These measures are to be taken prior to the extension of use of a particular agricultural chemical to a wide area and following experiments to learn how it is absorbed by crops, how it is cycled, and its metabolism through oxidation and degradation. Required also is study of quantities absorbed and disappearance in the natural environment of amounts retained, and after consideration, on the basis of research results, of characteristics such as the physiological poisoning of man and animals and permitted residual amounts, formulation of the number of days time interval necessary for safe use of chemicals.

(3) Getting Rid of Pollution

Currently, some people are studying the cleansing of crops through elimination of pollution. Generally speaking, if agricultural chemicals only taint the surfaces of crops, fruits, and vegetables, getting rid of the taint is a fairly simple matter. Floating them in water or solvents or cleansing them with steam can be highly effective. However, most agricultural chemicals presently in use are organic compounds that have been processed principally in a lactic or an oily solution. When used on crops, some can penetrate the surface of the crops to enter the body. For example, Japan has reported that 1605 shows fairly strong penetrability of paddy rice. Our experiments with methyle base 1605 on rice also revealed a similar situation. Even though the chemicals were applied at the booting stage, they still persisted in the rice grains at the time of harvest. Experiments have also shown that some organic agricultural chemicals applied to the surface of fruit can penetrate into the pulp of the fruit in substantial amounts. Furthermore, when systemic agricultural chemicals are absorbed by crops, they continue to circulate within the plants. Consequently, finding a handy yet effective way to get rid of pollution is quite difficult.

Experiments have shown that most of the residual agricultural chemicals in unpolished rice are concentrated in the husk. Thus, polishing of the rice can get rid of most of the residual agricultural chemicals.

In recent years, research has been done both in China and abroad on the use of microscopic organisms to rid soil and water of pollution caused by DDT, 2, 4-D, organic mercury, and thiram (tetramethylthiuramdisulfide, TMTD). Though some measures that can be used have been discovered, nevertheless, generally speaking, the elimination of residual pollution by agricultural chemicals is still in the experimental stage, and cannot be widely applied in actual practice.

(4) Adoption of Measures to Avoid Toxicity

Among different crops, the absorption rate of agricultural chemicals vastly differs. The rate of absorption of organo-chloride agricultural chemicals by different kinds of vegetable crops shows a great disparity. Generally speaking, those vegetables that readily absorb agricultural chemicals include carrots, followed by strawberries, spinach, radishes, potatoes, and sugar cane. Those that absorb it with difficulty include tomatoes, eggplant, round hot peppers, round cabbage, and Chinese cabbage. With the exception of cucumbers, most root vegetables and tubers absorb a great deal, while leafy vegetables, and fruity vegetables absorb little.

Furthermore, depending on how the soil is farmed, the residual effects of agricultural chemicals in the soil differ. For example, when the soil is covered with water, the speed of decomposition of organo-chloride insecticides such as DDT and 666 is greater than in the open air. It is generally believed that when the soil is inundated with water, the decrease in the persistence of organo-chloride agricultural chemicals is attributable to the formation of a reduction state in the soil following inundation, with an increase in the activity of anerobic microscopic organisms in the soil that hastens the breakdown of the agricultural chemicals.

In view of the aforesaid circumstances, it has been proposed that toxicity avoidance measures be taken to reduce the pollution of crops by agricultural chemicals. By this is meant no cultivation of crops that readily absorb agricultural chemicals for a specific period of time in those areas afflicted with pollution, but rather substituting another system of farming in order to reduce pollution by agricultural chemicals. According to research and investigation conducted by the Nanjing Soil Institute of the Chinese Academy of Sciences, the breakdown of 666 is much faster in wetlands than in drylands, so even though it has been more used in rice growing regions than in cotton growing regions, its persistence in the soil is less than in the cotton growing areas. Additionally, the breakdown of DDT also proceeds more rapidly in wetlands than in drylands. Consequently, conversion of drylands to wetlands or the rotational cropping of rice and cotton would be an extremely effective way of hastening the breakdown of DDT and 666 in the soil and in diminishing soil pollution in cotton growing areas.

(5) Development of Non-polluting Agricultural Chemicals

The poisonings occasioned by agricultural chemicals may be generally categorized as follows: (1) high poisoning of man and animals due to unselective toxicity of agricultural chemicals; (2) persistence of toxicity due to accumulation and concentration when agricultural chemicals cannot be dissipated in the environment because of their stability. Therefore, an ideal agricultural chemical should be one of

high effectiveness, low toxicity, and low persistence, i.e. one which would function only against the enzyme system of insects, micro-organisms, and weeds rather than against the cells of animals, and one that would, at the same time, be readily degradable by sunlight or microscopic organisms and would not pollute the environment even if used in large quantities.

The requirements to achieve this objective are very strict. Speaking in terms of some varieties of agricultural chemicals currently under development, few will be able to meet this objective. It should be considered that the widespread nature of the threat to mankind posed by residual toxicity is greater than the poisoning done by highly toxic kinds of agricultural chemicals. The latter is usually the result of lack of safety in the process of manufacture or use, with the poisoning often being limited to individuals, but this defect can be overcome in future with automation of the production process and the form in which the poisons are processed to reduce toxicity (such as the use of small capsules).

Finally, it should be pointed out that of all the aforementioned ways to prevent residual toxicity, sensible use and safe use of agricultural chemicals are the most active measures that may be taken to guard against the occurrence of pollution by agricultural chemicals. In a situation in which pollution exists, use of methods to eradicate pollution and methods of toxicity avoidance to reduce the extent of pollution of crops by agricultural chemicals are passive measures. The development of non-polluting agricultural chemicals is the future direction for development of agricultural chemicals.

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SHANGHAI FACTORIES ENVIRONMENTAL PROTECTION WORK INSPECTED

Shanghai JIEFANG RIBAO in Chinese 23 Jul 80 p 1

[Text] National People's Congress Standing Committee members Wang Yuguí [3769 3768 6311], Ji Changshan [0679 7022 1472], Shao Rongbin [6730 2837 6333], Yuan Xuefen [5913 5358], Ni Guyin [0242 6253 7299] and Ti Shijuan [5939 1709 1227] inspected the environmental protection work of some factories of the city from 16 to 19 July. Deputy chairman Di Jingsiang [3695 2529 5980] and Wang Tao [3769 3447] of the Shanghai Municipal People's Congress Standing Committee and members Zhang Wentao [1728 2429 1269] and Zhu Zhenghua [2612 2973 5478] also participated in this inspected activity. Yesterday, the city's committee leaders Chen Guodong [7115 0948 2767], Yan Youmin [0917 0147 3046], Han Zheyi [7281 0772 0001], Zhong Min [6945 3046], Xia Zhengnong [1115 1767 6593] and Chen Jinhua [7115 6930 5478] listened to the committee members give their opinions concerning the treatment of the three wastes for the welfare of the people.

After the committee members heard the reports from leaders of the Shanghai Bureau of Environmental Protection and Shanghai Bureau of Public Health concerning the city's environmental protection work and the effects of environmental pollution on human health, they braved the summer heat to inspect five factories and some areas to observe the three waste control conditions. They expressed satisfaction with regard to the efforts of the Guangming Electroplating Plant and the Dyeing Plant No 4 in urgently treating the three wastes to protect the environment and at the same time they also pointed out the problems of environmental pollution caused by some units due to incorrect handling of production and treatment of the three wastes.

In the morning of the 19th, the committee members observed water pollution conditions of the Huangpu River by boat. Although there had been heavy rains in the previous few days, the odor of the water was still quite offensive. Where the black and odious water of the Suzhou River coverages with that of the Huangpu River there is an obviously black-colored zone. Due to the large quantity of discharge of untreated industrial and biological waste water, the existing 10 tributaries of the Huangpu have become sewage channels to bring about serious pollution of the water of the Huangpu. That afternoon, the committee members climbed to the top story of the Shanghai Building and saw the ashen-colored smoke form a cover above the industrial zone. The smoke of many factories bellows out endlessly while the whistles of steamboats and horns of the automobiles attack the ear continuously. All of them personally witnessed this damage to the public and expressed their decision to present demands to the government for adopting measures to treat the three wastes.

Yesterday, the committee members expressed their feelings to the leaders of the municipal committee and demanded that the municipal committee and the municipal government must be concerned about the lives of the masses to exert efforts regarding environmental protection. The leaders of the municipal committee welcomed the critical opinions of the committee members and felt that these opinions will promote environmental protection work in Shanghai. With regard to the work of treating the three wastes, they insisted that basic treatment must be combined with superficial control and key point treatment must be combined with overall control. The policy is to combine administrative measures with economic means. The measures that have been decided upon and adopted should be strictly enforced. The existing foundation of Shanghai should be utilized to aim at long term solutions. Starting with what is on hand, good environmental protection work must be carried out on the basis of surveys and research to formulate reasonable plans that conform with science and are to be implemented in steps. The Municipal People's Congress Standing Committee also called a symposium on the 21st. Deputy Mayor Yang Ti [2799 1029] and related committee members and officials in charge of related bureaus of the municipal government listened to the opinions of the committee members.

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CITY IN SICHUAN MOVES TO REDUCE FACTORY POLLUTION

Beijing GONGREN RIBAO in Chinese 6 Oct 80 p 1

[Article by Qing Shanghua (1987 1424 3478): "Luzhou Enterprises Guilty of Serious Pollution Moved Outside City"]

[Text] Luzhou Municipality of Sichuan Province has resolved to relocate some factories that are seriously polluting the environment, and that cannot be improved within a short time, out into the suburbs, to convert them to other forms of production, or to close them down so as to protect the environment and the physical health of the masses of people.

A few years ago, some units disregarded objective conditions and willfully established factories in the vicinity of schools, organizations, and residential areas, right in the center of the city, and proceeded with production, resulting in serious pollution of the environment and direct damage to the physical health of the masses. Various people have reacted to this violently. The Luzhou Municipal Department of Environmental Protection listened to the pleas of the masses. Specialized technicians were dispatched to carry out onsite surveys and send reports to the Municipal Committee and the Municipal Revolutionary Committee. Concrete opinions with regard to moving a factory out, converting to another type of production, or stopping production were proposed. Following coordination by all sides, six factories, such as the Changjiang Battery Plant, that were creating serious pollution were either partly--for example, a machine shop or a work process--or entirely relocated, converted, or closed. Three other enterprises are in the process of being moved away. These measures have had an obvious effect on pollution control and are welcomed by the masses.

In the process of moving out enterprises that seriously pollute, various related departments of Luzhou cooperated with one another to facilitate and to provide the conditions. The Luzhou Municipal Plastics Plant, which produces plastic foam shoes, was dispersing poisonous gases everywhere. The plant was located in the heart of the city, and the damage it created was very great. After it was ordered to move out, the city helped with the moving expenses and provided the site of the Municipal Committee School in the suburbs for the plant to move to. This aid caused the work of moving to be completed smoothly. Now, Luzhou Municipality is paying attention to the items produced by all newly constructed, expanded, and reconstructed factories to carry out the management seriously. Until the Municipal Environmental Protection Department issues a certificate of approval, the Bureau of Construction will not issue a construction permit, the bank will not approve the loan, and the Bureau of Industrial and Commercial Management will not grant a business license.

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CSO: 5000

MIXED RESULTS WITH REGARD TO POLLUTION CLEANUP

Treatment of 'Three Wastes'

Beijing GONGREN RIBAO in Chinese 4 Oct 80 p 1

[Article by Zhang Desun (1728 1795 3349)]

[Text] Jiading County of Shanghai City is eagerly treating the "three wastes." At present, more than 20 electroplating plants that are seriously polluting have begun to treat their poisonous wastewater.

This county has more than 920 factories operated by the city, the county, communes, or brigades. In the past, about 70,000 tons of wastewater were discharged by these plants, in addition to more than 500 tons of toxic gases and poisonous substances and more than 2,000 tons of smoke and ash. This caused the sources of water, as well as the air, and the soil, to be seriously polluted and the health of the people and the production of agricultural byproducts to be seriously affected. In the past 2 years, the county leaders have emphasized the treatment and control of the "three wastes" and have formulated overall plans for the entire county. "Three-waste" treatment and control organizations have been established by the Bureau of Industry Management, the County Revolutionary Committee, and the communes, and are staffed with specialized cadres. They regularly visit the plants to help resolve problems of capital, materials, and technology in the process of "three-waste" treatment and control. Every item they tackle, they see to it that a real effect is obtained. Those who discharge waste gas and wastewater against regulations are ordered to stop production, or economic sanctions may be used to urge them to treat and control the "three-wastes" quickly and satisfactorily.

In the process of treating and controlling the industrial "three wastes," the county also eagerly induces the masses to reform the production processes and to practice comprehensive utilization. For example, Fengbin Commune has newly constructed an organic chemical plant which adopts a new work process to refine the waste gas discharged by petrochemical plants into organic glass, with annual production reaching 100 tons. Afterward, they have again reformed the work process to reclaim and treat the ethyl cyanide liquid waste and waste sulfuric acid discharged in the production process. Some of these wastes are used cyclically; some are made into new products to convert waste into treasure, to turn the harmful into the beneficial.

Destruction of Marine Life

Beijing DONGREN RIBAO in Chinese 4 Oct 80 p 1

[Article by Shui Ke (3055 4430)]

[Text] Baiyangding of Hebei Province is a famous freshwater lake. The water used to be of excellent quality and the marine life was plentiful. In the past, the area was a land of fish and rice. In recent years, following the development of industries, 250,000 cubic meters of industrial wastewater have been dumped into the upper reaches of Baiyangding every day. According to the chemical analysis by the related department, the lake water contains more than 20 types of toxic substances, with most of these exceeding the water quality standards for fishery. Of these contents, the petroleum content is 48 times that of the standard. Owing to the serious pollution, the marine resources have been greatly damaged. Some natural spawning grounds most suitable for fish eggs to hatch have been severely contaminated, damaging to a very great extent the propagation of fish and shrimp and the growth of their young. The original 17 families and 54 species of fishes have now been reduced to 13 families and 32 species. The famous triangular bream, mandarin fish, mullet, and crucian carp are basically extinct. The number of freshwater crabs and blue shrimp has been greatly reduced. Every time the polluted water rushes into the lake, the fish and shrimp quickly die. Dead bodies are floating everywhere. It is an unbearable sight. Hydrophytes also form a great treasure of Baiyangding. Now, the quantity of *Sagittaria sagitifolia*, water caltrop, and lotus has been greatly reduced. The stems of the reed plants are black and brittle, and the quality and yield have been greatly reduced.

Due to the fact that the lake has been polluted for a long time, not only are the marine animals and plants damaged, but the quality of the ground water is affected as well. The physical health of the people is being directly threatened. On the banks of the lake and along the estuary of the Fuhe, the ground water pollution is especially severe. Chemical analyses of four items have revealed that they greatly exceed permissible levels.

The condition of pollution of Baiyangding has become extremely critical. If there is not early treatment and control, the rich and beautiful Baiyangding will become an expanse of dirty water devoid of resources.

For the purpose of protecting the health of the people and the resources of marine products, it is hoped that the related departments will adopt emergency measures to stop the continuous pollution of Baiyangding.

6168

CSO: 5000

GAINS MADE IN AFFORESTING DESERT AREAS OF SHAANXI

Beijing GUANGMING RIBAO in Chinese 1 Nov 80 p 2

[Article by Chen Yi-hao (7115 0001 6389): "Great Hopes for Afforestation, Desert Control"]

[Text] Is afforestation possible in a desert region? Can afforestation control the sand? These are questions of popular concern and are being frequently debated. This reporter recently attended an afforestation and desert-control experience exchange conference in Datong Municipality in Shanxi and interviewed the delegates representing various areas of the North, the Northwest, and the East. Some affirmative answers to these questions were heard from them.

Clear Direction, Abundant Confidence

Yulin Prefecture of Shaanxi Province is in the middle section of the "Northern Three" protective forest belt. It is one of the key areas of afforestation for sand control in the entire country. The state assigned to Yulin Prefecture the task of first-stage afforestation (i.e., 1978-1985) of 7.6 million mu. Can this task be completed in guaranteed quantity and quality? This reporter interviewed Liu Fengming [0491 7685 7686], head of the Bureau of Forestry of Yulin Prefecture. He said with full confidence, "We believe the task will be completed in its entirety ahead of time, because there is a clear direction in forestry work now, and everyone is full of enthusiasm."

For a long time, Yulin Prefecture onesidedly practiced a policy of "grain first." Forestry and animal husbandry were squeezed, causing a serious imbalance in the ratio of agriculture, forestry, and animal husbandry. By 1977, the afforested area in the entire district was only a little over 6 million mu. In 1978, construction of the "Northern Three" protective forest belt was listed as a key item by the state. In the past 3 years, due to the implementation of the policy emphasizing forestry and animal husbandry, the area of afforestation was increased by 3 million mu. Now that forestry has been regarded as an important item of daily schedule by the party and the government, all departments and industries are concerned and provide assistance. Every tree-planting season, the labor and materials of the entire prefecture are concentrated on afforestation work. The labor spent in afforestation amounts to 10 percent of the total labor expended in the prefecture. Liu Fengming said, "We also have many favorable conditions. For example, we can supply by ourselves the saplings and seeds needed for the first-stage afforestation. We have one brigade specializing

in forestry and also have a group of state-operated forests and commune and brigade forests. A rate of progress of 1 million mu per year is possible, and the quality and quantity may be guaranteed. It is estimated that by 1985 the rate of forest cover may be raised from the present 14.9 percent to 24.6 percent. The forest coverage of the seven desert counties may reach 35 percent. In this manner, the desert may be gradually transformed into good places with healthy trees, grain, and animals.

Broaden the Policy To Mobilize Positiveness

Many delegates spoke of liberating thoughts and broadening the policy to mobilize the positiveness of the cadres and masses for afforestation. This is the key to accelerating the "Northern Three" afforestation project. Nei Menggu Autonomous Region's Liangcheng County Party Committee Secretary Guo Jiming (6751 4949 2494) said that ever since the policy of "whoever plants the forest will manage it and own it" was implemented in Liangcheng County this year, afforestation has progressed very quickly and the quality has improved as well. While a system of responsibility has been established for state-operated forest and commune and brigade forest personnel to construct the forests of the whole county, some wasteland and waste mountains cannot be taken care of by the state-operated forest and commune and brigade forest personnel, and so these areas are given to the commune members as private forests. Some of these [areas] cover only 1 mu and some are 10 mu. Certificates of forest rights are given for these plots. The commune members plant trees in these plots, and they have to supply their own saplings. If the survival rate reaches more than 90 percent, there will be no charge for the saplings. If the survival rate does not reach that level, sapling fees will be charged according to the number of trees. Another portion is assigned to the various organizations, groups, factories, mines, schools, etc. The right to the forest and the profits are given to the various organizations. A positive attitude toward afforestation is thus generated among the masses of workers. This spring, the various departments of the county finished planting trees on more than 1,000 mu. This year, the county's afforestation plan is 230,000 mu. This spring, 150,000 mu were planted—an increase of 30 percent over the same period last year.

Scientific Afforestation, Fast and Good

For many years, many areas constructed forests every year, but every year there were no forests to be seen. A great deal of effort was spent, but the planted trees became "small old men." They never became usable timber, and there was very little economic benefit. The important reason for this was the lack of knowledge of scientific afforestation. Yulin County of Shaanxi Province experienced this mistake.

There are 2 million mu of desert sand in Yulin County. This acreage is arid, thin, and severely wind blown. In the past, the county told the masses to plant tall desert willows [*Salix matsudana*], but even this species was not suitable to the arid climate and the survival rate was very low. In 1971, the Niujialiang tree farm began to pay attention to planting trees suitable for the land. On the shifting sand, they first planted drought- and wind-resistant shrubs such as *Amorpha fruticosa* L., *Elasagnus angustifolia* L., *Capparis spinosa* L., etc. When the sand was basically stabilized, such tall tree species as *Pinus tabulaeformis*, *Populus rotundifolia*, *Sophora japonica*, *Populus diversifolia*, etc., were added with some species of meadow grass to form, gradually, a colony of trees, shrubs, and grass to function effectively as a sand-stabilizing forest. When the county observed the effect of this

method, they began to extend this experience of the Niujialiang tree farm. In the past several years, sand-controlling forests were thus constructed to cover 200,000 mu per year. By the end of last year, 400,000 mu of waste desert in the county had been turned into agricultural fields. In the 9 years from 1971 to 1979, about 1.2 million mu of forests were preserved--about 100,000 mu above the area of forests of 18 years previously. Last year, the total grain production of Yulin County reached 100,600,000 jin, a 1.4-fold increase over that of 1970. This achievement is inseparable from the fast afforestation pace of the county. Yulin County Party Committee Deputy Secretary Zhao Boyan [6392 0590 1750] commented excitedly that it is easy to talk about scientific afforestation and planting trees to suit the land, but it is difficult to practice it. Whenever trees suitable for the land are planted, and wherever tall trees are fittingly combined with shrubs and grass, the effect of reconstructing the shifting sand may be obtained with just half the work.

6168

CS0: 5000

NONIONIZING ELECTROMAGNETIC RADIATION PROTECTION ENACTED

Warsaw DZIENNIK USTAW in Polish No 25, 17 Nov 80 pp 277-278

[Ordinance by the Chairman of the Council of Ministers, J. Pinkowski: "Ordinance of 5 November 1980 of the Council of Ministers Concerning Specific Regulations Governing Protection Against Nonionizing Electromagnetic Radiation Harmful to Humans and the Environment"]

[Text] Pursuant to Art 63, Point 1, and Art 71, Point 2, of the Decree of 31 January 1980 on Environmental Protection and Development (DZIENNIK USTAW, No 3, Item 6), the following is hereby ordained:

Para 1.1. This ordinance contains detailed provisions governing the protection of humans and environment against nonionizing radiation in the form of electromagnetic fields with frequency of 50 Hertz (Hz), generated in particular by electric power stations and lines, and in the form of electromagnetic fields with frequencies of from 01.1 to 300,000 Megahertz (MHz) generated in particular by radio communication, radio navigation, and radar equipment.

2. The provisions of this ordinance also apply to protection against any other nonionizing radiation in addition to that mentioned in Point 1 if such radiation endangers the environment and human health.

Para 2.1. Organizations and individuals designing, installing, and using equipment generating electromagnetic fields and designing facilities located in the neighborhood of such fields are hereby obligated to take technical and organizational measures to maximally reduce the danger of such fields to the environment and human health.

2. The concerned ministers shall, in cooperation with the minister of administration, local economy and environmental protection and the minister of health and public protection, issue specific guidelines for the design and operation of equipment generating harmful electromagnetic field so as to take into account the protection of environment and human health.

Para 3.1. First- and second-degree protective zones are hereby established in the environs of the sources of the electromagnetic fields mentioned in Para 1, Point 1.

2. The thresholds for specific protective zones are specified in the appendix to this ordinance.

Para 4.1. Decisions on the establishment of protective zones shall be made by the voivodship-level local units of state administration in cooperation with the state voivodship medical inspector on the basis of the results of control measurements and of the opinion of the pertinent units named in Para 8, Point 1, with allowance for the zone thresholds specified in the appendix to this ordinance.

2. The minister of administration, local economy and environmental protection shall, in cooperation with the minister of health and public protection, issue regulations governing sojourns in a particular area in the event of a doubtful estimation of the degree of the harmfulness of electromagnetic fields to humans and the environment in that area, and in particular if frequency ranges of the fields operating in that area differ.

Para 5.1. The following provisions govern the sojourn of humans in the discrete protective zones and the development of such zones:

1) Within the first-degree protective zone, sojourn by humans is prohibited, with the exception of persons employed in operating the field sources; the sojourn of such persons is governed by separate regulations;

2) Within the second-degree protective zone, periodic sojourn by humans associated with economic, tourist, recreational, etc, activities is permitted, but it is prohibited to locate within that zone residential buildings and buildings requiring special protection against the effect of electromagnetic fields, particularly hospitals, boarding schools, creches, kindergartens, etc.

2. Exemptions from the provisions of Point 1 may be granted for a definite period of time in cases justified by special technical, economic, and social considerations, if the residential buildings and the facilities serving as sources of electromagnetic fields were built and used prior to the promulgation of this ordinance.

3. Decisions to such exemptions shall be made by the voivodship-level units of state administration in cooperation with the state voivodship medical inspector upon consulting the concerned agencies named in Para 8, Point 1.

Para 6.1. The installation of equipment generating electromagnetic fields defined in Para 1, Point 1, in existing facilities requires prior consultation of the concerned state voivodship medical inspector and approval by the concerned voivodship-level unit of state administration.

2. Permits issued to install the equipment mentioned in Point 1 must specify the anticipated intensity and density distribution of the field energy flux, the extent of the protective zones surrounding the facilities and equipment, and, when so needed, opinions by the agencies named in Para 8, Point 1.

3. The protective zones and the intensity and density thresholds of the energy flux of electromagnetic fields should be determined on the basis of design calculations and model tests during the stage of the determination of the sites of equipment generating electromagnetic fields.

4. Whenever equipment generating the electromagnetic fields specified in Para 1, Point 1, is put into operation, the proper voivodship-level unit of state administration and the proper voivodship state medical inspector should be notified.

Para 7.1. Users of equipment generating electromagnetic fields are obligated to assure the conduct of control measurements by the agencies named in Para 8, Point 1, and to report to the proper voivodship-level unit of state administration and the proper voivodship state medical inspector on the results of these measurements and the findings of the agencies.

2. Control measurements of electromagnetic fields generated by existing equipment should be conducted directly after that equipment is put into operation and repeated whenever operating conditions are changed so that such conditions could affect the intensity and density thresholds of the electromagnetic field energy flux and the extent of the protective zones. Control measurements of electromagnetic fields generated by equipment operating within the frequency range of from 0.1 to 300,000 MHz should be conducted at least once every 3 years.

Para 8.1. The control measurements shall be carried out by:

1) The ENERGO-POMIAR Metrological and Research Facility--as regards electromagnetic fields with 50 Hz frequency.

2) The State Radio Inspectorate--as regards electromagnetic fields with frequencies of from 0.1 to 300 MHz.

3) The Industrial Institute of Telecommunications--as regards electromagnetic fields with frequencies of from 300 to 300,000 MHz.

3. The minister of administration, local economy and environmental protection may, in cooperation with the minister of health and public protection, approve requests by concerned ministers to use other agencies as well to conduct the measurements specified in Point 1.

4. The minister of communications shall, in cooperation with the chairman of the Polish Committee for Standards, Measure, and Quality, and upon consultation with the concerned ministers, determine the procedure for the conduct and assessment of control measurements and for the designation of first-degree protective zones with the object of environmental protection.

5. The cost of the measurements referred to in points 1 and 2, as conducted for the benefit of the users of equipment generating electromagnetic fields and investors in and users of facilities located in the neighborhood of such equipment, is reimbursable.

Para 9. The ministers of national defense and the interior shall, in cooperation with the ministers of administration, local economy and environmental protection, and of health and public protection, apply the provisions of this

Ordinance to the conditions of the agencies of the ministries of national defense and the interior.

Para 10. Whenever ministers are mentioned in this ordinance, it is to be understood that this also applies to directors of central offices.

Para 11. This ordinance is effective as of the date of its promulgation.

Chairman of the Council of Ministers: J. Pinkowski

Supplement to the Ordinance of 5 November 1980 of the Council of Ministers
(Item 101);
(Item 101)

Protective Zone Thresholds

Form of Radiation		Protective Zone	
		First-Degree	Second-Degree
Electromagnetic fields with frequencies of (electrical component)	50 Hz	Upward of 10 kv/m	Upward of 1 kv/m to 10 kv/m
	0.1-10 MHz	Upward of 20 v/m	Upward of 5 v/m to 20 v/m
	Upward of 10 MHz to 300 MHz	Upward of 7 v/m	Upward of 2 v/m to 7 v/m
Electromagnetic fields with frequencies of upward of 300 MHz to 300,000 MHz:			
--steady-state fields		Upward of 0.1 w/m^2	Upward of 0.025 w/m^2 to 0.1 w/m^2
--transient fields		Upward of 1 w/m^2	Upward of 0.25 w/m^2 to 1 w/m^2

Remarks:

- The thresholds specified in the above table correspond to:
 - Effective intensities of electrical fields with frequencies of 50 and 0.1-300,000 MHz;
 - Mean densities of the energy flux of electromagnetic fields with frequencies of from more than 300 to 300,000 MHz.
- Steady-state and transient fields are defined by separate regulations.

1386

CSO: 5000

OVERFLOWING SEWERS CAUSE POLLUTION PROBLEMS

Lima COMERCIO in Spanish 23 Nov 80 pp 10-11

[Article by Oscar Miro-Quesada Cantuarias: "Lima's Overflowing Sewers and the People's Health"]

[Excerpts] What does the continuous overflowing of sewers in Greater Lima have to do with our people's health? The answer is: a lot! In fact, almost all the overflows are caused by defects in the sewer system, that is, in the underground pipes used to carry off so-called waste water or sewage containing great quantities of organic matter in a state of decomposition.

Obstructions

Obstructions in those pipes and their insufficient diameter for the large current volume of sewage in Greater Lima result in such a great increase of pressure in the internal liquid column that the pipes frequently crack and break open producing the excessive overflowing which is typical of our thrice crowned city! The damage the overflowing sewage is causing our pedestrians and motorists is as nothing compared with the biological risks it represents for the health of Lima residents.

Decomposition of Organic Matter

Why is this sewage dangerous for the health of the inhabitants? It is because the large quantity of organic matter in suspension or dilution in waste water (rejects, food waste products, organic waste and the like) is attacked by certain microbes (bacteria) which cause the fermentation and putrefaction of that organic matter.

In decomposing the aminoacid content of the proteins—the fundamental base of organic matter—during the chemical process of putrefaction, these microbes release a large quantity of ammonia, hydrogen sulfide and organic amines, all volatile and highly toxic chemical compounds!

Sewage Overflows and Atmospheric Contamination

We have seen how the bacteria of putrefaction produce great quantities of volatile, highly toxic chemical compounds such as ammonia, hydrogen sulfide and organic amines. The enormous area of evaporation of these overflows causes the air to

become contaminated with these three chemical compounds so harmful to the people's health. Moreover, one of them—hydrogen sulfide—a gas which is very soluble in water (three parts of hydrogen sulfide to one of water), is slowly rising in the atmosphere due to the turbulence created by air currents (this gas is slightly heavier than air), reaches the highest atmospheric levels (Lima's so-called "cloud ceiling"), and, because of the great humidity of our climate and the effect of the sun's ultraviolet rays which filter through the clouds, is catalytically oxidized converting the hydrogen sulfide into sulfuric anhydride. In turn, this highly toxic gas hydrates with the high humidity of our climate and is converted into sulfuric acid! This means that, with Lima's climate, in addition to gases which are very harmful to one's health and are emitted by its overflowing sewers, through the catalytic process of oxidation and hydration we even have sulfuric acid in the atmosphere we breathe!

Permissible Limits of Atmospheric Contamination

Before concluding, it is appropriate to comment on statements made by Engineer Hector Ugarte Chamorro, head of the chemical laboratory of the Occupational Health Institute, one of the National Health Institutes and the technical and scientific organization of the health sector. Dr Ugarte Chamorro, one of Peru's most highly qualified experts on problems of environmental pollution, makes important statements in EL COMERCIO's 1 November issue on the danger of atmospheric pollution in our city. He warns that "Lima could soon be faced with situations similar to the serious conditions encountered in Sonora, Los Angeles, London and other cities if appropriate measures are not taken as repeatedly recommended to the authorities by the National Health Institutions." He indicates that "our situation, being that of a developing country, makes the outlook still more pessimistic due to the population density, the increase in automobile traffic, growing industrialization and a new type of pollution: that of the home!" In the interview he mentions that the permissible limits established both in the United States and the USSR and adopted by the World Health Organization for atmospheric pollution are: particulates in atmospheric suspension, 75 micrograms per cubic meter of air (in Lima we now have 128 micrograms per cubic meter of air); hydrogen sulfide, 0.006 parts per million (in Lima 0.073 ppm were detected by the Occupational Health Institute!); ammonia, 0.200 ppm of air (in Lima, 1.640 ppm); sulfuric anhydride, 0.06 ppm of air (in Lima 0.0575 ppm were detected in 1973; what will be its concentration in 1980?). And, finally, Engineer Ugarte Chamorro discloses that in the center of Lima, due to an excess of automotive traffic with defective carburation (one has only to observe the buses and minibuses), the atmospheric concentration of carbon monoxide is 32.8 ppm of air, while the international permissible limit is 30.0 ppm maximum!

We are convinced that both the health and municipal authorities, in coordination with all public sectors involved in this matter, should immediately begin a thorough study to resolve this extremely serious problem affecting the health of the Peruvian people and, in particular, all the residents of the thrice crowned city of Lima.

8568

CSO: 5000

POLLUTION AGREEMENT SIGNED

Jiddah ARAB NEWS in English 17 Jan 81 p 2

[Article by Farouk Luqman]

[Text]

JEDDAH, Jan. 16 — The Conference for the Protection of the Red Sea and Gulf of Aden Environment concluded its meetings by approving an agreement to save the seas of the area from pollution.

The conference was held here during the last week and signed a protocol of cooperation against oil pollution. It included representatives from Saudi Arabia, Jordan, North Yemen, South Yemen, Sudan, Somalia and the Palestine Liberation Organization. Djibouti which is a member of the Arab League and situated at the southern tip of the Red Sea did not send a delegation.

The agreement stressed the protection of the environment and the effects of pollution on the health of the people in the region, according to Abdullah Awadh, leader of the North Yemen delegation. "It is the marine environment of the region that we aim to protect," he told Arab News Friday. This calls for close cooperation by the participating states and a survey of the region's potential for marine sciences, geological and geophysical forces and their effects on human health.

Awadh said that the conference studied geophysical application of the agreement, the responsibilities of the member states, joint cooperation and damages to be paid in the event of pollution caused by any one of them.

"Only naval ships and non-commercial vessels have been exempted on grounds of national sovereignty," he said.

Besides, a regional organization for the protection of the Red Sea and the Gulf of

Aden will be set up, the delegates decided. It will be based in Jeddah and will include a council of the member states to follow up the implementation of the agreement, a working plan and a system for monitoring pollution, a secretariat for administrative purposes and communication with the government concerned and legal committee to settle disputes.

Conference members reviewed and approved a final plan of action to protect the environment for the "benefit of the coming generations." It will define the coastal areas to be covered and include a comprehensive procedure that must be adopted to ensure the proper working of the plan.

The delegates decided to attach this plan to the original draft agreement which must be approved by their governments within four to six months. A meeting of government delegates will be held here for this purpose, he said.

The main working paper, mainly technical, was submitted by the Saudi Arabian delegation led by Dr. Abdul Bari Al-Oheim, assistant director of meteorology, who was elected chairman of the conference. The draft agreement defined pollution as a human act, carried out directly or indirectly, to introduce any material or any energy sources into the marine environment which might cause harm to the people of the area and other creatures. Oil pollution included that caused by any oil derivative and in any form. An emergency aid center will be set up to fight pollution as a joint enterprise.

BRIEFS

TSETSENG WATER SHORTAGE--Officials of the Ministry of Water Affairs and Mineral Resources said there is no underground water at Tsetseng, a village in the Kweneng District bordering the Kgalagadi District, which has been going without water for a very long time. In a meeting attended by both officials from the Ministry and the Kweneng District Council last week, residents accused the Water Affairs Department of neglecting their village, and they claimed that the wells recently sunk by the department spouted salty water. The villagers complained that they were not consulted before the wells were sealed. "How could we determine that the water was salty while we did not even taste it?" one villager asked. "The only salty water we know of was that drilled in 1932 by Kgosi Kgari." The Kweneng District Council Chairman, Mr V.B. Kgositintsi, said the village was lacking behind development-wise because of lack of water. He proposed that if there was water in the drilled wells, samples should be taken to Gaborone for analysis to determine whether it was salty or not. The Planning Officer in the Ministry of Water Affairs and Mineral Resources, Mr G. Tlogeland, pointed out that Tsetseng was not intentionally left behind, and that if wells are sealed after sinking, it was only because water was salty, and would later be used for building projects. He, however, said that there are plans to sink more wells in the village. Mr D.D. Molefe, the Deputy Council Secretary, declared that the village is number one in the council's priority list. He pointed that the village does not even have school because of water shortage. [Excerpts] [Gaborone DAILY NEWS in English 16 Dec 80 p 1]

CSO: 3000

ETHIOPIA

BRIEFS

FOREST FIRE--Jimma--Fire blazed in the Gojebe state forest in Kaffa Region recently and caused damage to thousands of trees, according to Comrade Col. Tedla Desta, Chief of the Regional Police. The fire which lasted for 21 hours was sparked off when workers at the site lighted fire to control hedgehogs. The workers were reported to have stuffed with grass hollow grounds bored by the hedge hogs before lighting the fire. Peasants of the Seka Chekorssa locality tried hard to put the fire under control, but as the ground was mostly covered with grass, it went on blazing for hours, said Comrade Col. Tedla. [Text] [Addis Ababa THE ETHIOPIAN HERALD in English 11 Jan 81 p 4]

C50: 5000

SOUTH AFRICA

BRIEFS

RAINFALL IN NATAL--Durban--Natal farmers have welcomed the soaking rains which fell over most of the province during the weekend. The steady rains boosted the farmers' chances of a successful crop this year in comparison with the heavy losses inflicted last year by the serious drought. A spokesman for the Natal Agricultural Union confirmed the steady rainfall over the weekend had been extremely useful to all sectors of agriculture because it penetrated the earth with little runoff. He said that although the rainfall had helped the farmers, more rain was still needed to fill the dams, streams and underground water schemes. Sugarcane farmers along the Natal North Coast, who have not received good soaking rain since the spring showers, indicated the latest rainfall had been a relief but more was needed to ensure a bumper crop this year. [Text] [Johannesburg THE CITIZEN in English 20 Jan 81 p 7]

CSO: 5000

EARTHQUAKE OBSERVATORY ESTABLISHED

Ashkhabad KOMSOMOLETS TURKMENISTANA in Russian 19 Jul 80 p 3

[Article by A. Khanbabayan, Novosti Press Agency correspondent: "Earthquakes Are Being Studied"]

[Text] An underground observatory, a branch of the Institute of Geophysics and Engineering Seismology of the Armenian SSR Academy of Sciences, began operations only a few months ago in the Armenian settlement of Garni.

The observatory's main "equipment" is a tunnel nearly 430 meters long, which was drilled in the rock mass. It contains laboratories equipped with up-to-date sensitive equipment which helps Armenian geophysicists to follow the planet's "breathing" and to register underground tremors.

"At present no one is in a position to answer the question of how an earthquake can accurately be predicted," says Stepan Piruzyan, head of the underground observatory. "For this purpose we are currently studying the so-called precursors of this terrible disaster: the displacement and tilting of the earth's surface, changes in the magnetic field and electrical resistance of rocks, shifts in the water level in wells and many others. More than 300 of these precursors have been counted. Our main task is to determine the link between the underground tremors and the phenomena which precede them."

The Armenian SSR is located in a seismically active zone. For this reason the problems which are being studied by the staff members of the Institute of Geophysics and Engineering Seismology and its branch in Garni are applied as well as theoretical in nature. The institute is located in the republic's second largest city, Leninakan, where several earthquakes with a force of two to eight on the MSK-64 scale are observed every day. Is it not strange that the residents of the city do not notice them at all? The key is that the earthquakes take place within the institute, on a special vibrating platform, which is used to test the earthquake resistance of models for future buildings. A few years ago the vibrating platform held a model of the Armenian Atomic Power Plant. Before the workers arrived on the construction site geophysicists had conducted dozens of experiments and hundreds of laboratory tests. Recommendations by the seismology experts are added to all the precautionary and protection measures which are taken during the construction of such facilities.

The process of industrialization is proceeding at a rapid pace in Armenia today. Every year the map of the republic shows new young cities and industrial centers. A detailed seismic map is compiled for each of them during the planning period. In the republic today not a single industrial facility or multistory residential building is erected without the consent of specialists and their concrete recommendations.

But what should be done about the monuments, buildings and complexes which are of historical value and which have been taken into state care, as well as whole cities which have developed over centuries? There are many of the latter in Armenia, and they are the most vulnerable to the destructive forces of an earthquake. Scientists conduct regular studies of ancient structures. They calculate the frequency of the strongest vibrations of the soil, and based on the data which they obtain, preventive work is carried out. It is of interest that their calculations largely confirm the ancient chronicles and works by Armenian historians. For example, earthquakes with a force of seven take place in the Ararat Valley once in 30 years, and those with a force of eight occur ten times less frequently. These figures correspond for the most part with modern scientific data.

8543

CS01 5000

KOSTROMA OFFICIALS COMMENT ON WATER POLLUTION

Moscow *Ekonomicheskaya Gazeta* in Russian No 41, Oct 80 p 16

[Article by B. Cherednichenko, senior inspector of the oblast fish protection Inspectorate, city of Kostroma: "Stricter Demands Required"]

[Text] Our oblast has dozens of large and small tributaries of the Volga. They feed the great river, making it larger than it is in other places. The public health and epidemiology station has concluded, and the fishermen agree unanimously, that the water in the area of Kostroma has become significantly cleaner.

Environmental protection measures taken by the party and the government have played a large role in improving the water. A number of enterprises have built reliable traps and introduced improved technology which has reduced waste. Log drifting has been reduced. But it is still early to say that the state of the river is completely satisfactory.

A bulk plant (A. Aristov, director) is located in the city of Shar'ye. It has equipment to trap petroleum products during rains and flood tides. Unfortunately, these traps are poorly maintained; they are frequently broken, and patches of oil run into the Sholeshka River.

Oily rings from a locomotive and a train car depot as well as storm runoff water flow into the neighboring Shar'inka River. The heads of the depots, N. Blinov and A. Moiseyenko, have promised repeatedly to correct the situation, but no serious changes for the better have been seen yet.

We are also concerned about the fate of Lake Galichskoye. If well cared for, it can provide many first class fish. Unfortunately, not all of those who use it feel responsible for preserving this great body of water. The treatment facilities of the Revolyutsia Leather Plant (L. Bykov, director) and of a poultry factory (P. Trifonov, director) are poorly operated and break down frequently. The local excavator plant (I. Lebedev, director) and the Sel'khoz-khimiya Association (M. Khodunov, chairman) have done almost nothing to carry out the directives of the public health and epidemiology station or the fish inspectorate. Nor are the municipal filters always reliable in holding back that which should not go into the rivers and lakes.

It is well known that the party and Soviet organs of Kostroma are strict about monitoring the fulfillment of production quotas by enterprises. It would be good if these same high standards were manifested in the matter of implementing environmental protection measures. I have in mind first of all the directors of the following plants: Rabochiy Metallist, Strommashina and the silica brick plant.

The fish protection inspectorate has serious claims against the management of the Sudislavl' State Fur Farm, the Sudislavl' Sovkhoz-Tekhnikum and the Gor'kovskiy Sovkhoz. There have been delays in the construction of municipal treatment facilities in Buy, Ney, at the Manturovo Plywood Combine and at a number of butter and cheese plants.

A careful analysis shows that almost none of the above listed cases is caused by a lack of funds. A number of facilities have had more funds allotted to them than in previous years. This means that success depends primarily on the economic organizations themselves.

And one more comment. The oblast fish protection inspectorate has imposed relatively small fines on the managers of the excavator and leather plants. However, for reasons that are completely incomprehensible to us, the Galichskiy Rayon People's Court reduced the material punishment to insignificantly small sums. Of course, liberalism of this kind does not contribute to the better implementation of measures to protect the forests, rivers and lakes.

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FIRE PREVENTION REGULATIONS DISCUSSED

Moscow MOSKOVSKAYA PRAVDA in Russian 15 Oct 80 p 3

Text By its order of 3 September 1980 the ispolkom of the Moscow Soviet made it mandatory for directors of enterprises, organizations and institutions in the capital to carry out supplementary measures aimed at improving fire prevention in the city's housing stock and other facilities.

Our special correspondent, O. Basilevich, met with Major General I.L. Antonov, head of the Fire Protection Administration of the Main Administration of Internal Affairs, which comes under the ispolkom of the Moscow Soviet. Our correspondent asked him to comment on this document.

"In issuing this order," said Comrade Antonov, "the Moscow City Soviet ispolkom considered the fact that with the approach of fall the danger of fire breaking out increases significantly. During this period various kinds of electrical heating equipment, including homemade equipment, are used to heat quarters, and this frequently leads to fires.

It was, for example, only quite recently that electrical heating equipment caused a fire in a cafe located in the Sokol'niki Park of Culture and Rest. The building and material valuables suffered damage in the fire.

One further example. In this case a room, furniture, a television and radio in apartment No 43 at Building No 5 on Volokolamskiy Passage were burned. The reason: Ye. Saranchina, who lives in this apartment, left an electric heater on when she left the building.

V. Bogdanov, head of sector SU-251, now clearly agrees with me that a forbidden method of thawing out frozen pipes causes a danger of fire: he has experienced first hand what this kind of violation of the fire safety rules can lead to. In Yasneva, on Solov'iny Passage, they were finishing up the work on Building No 76-78 when the workers discovered that water had frozen in the central heating pipes. They were warming them up with torches when the fiber packing of the window unit caught fire. Black puffs of smoke billowed from the 12th floor.

Experience shows that with the coming of the fall and winter period the danger of fire also increases because the amount of daylight is reduced; there is a resulting increase in the consumption of electrical energy, and the load

placed on the electrical grid grows. Shorting occurs in places where the grid needs repairs or the insulation is worn. For this reason the power plants must be operated in a technically competent manner.

During the fall and winter period there is a sharp increase in the number of fires occurring in temporary living quarters at construction sites. In some cases this is because the necessary monitoring of fire prevention practices at these places has not yet been established: many of the temporary residents continue to obtain heat from homemade electric heaters, which are sometimes wired and operated in ways that do not meet the appropriate rules.

I have taken advantage of the opportunity to request that the management of Glavmosmontazhspetsstroy [Main Moscow Administration for Installation and Special Construction Work] speed up the development and production of temporary living and working quarters made of incombustible materials with safe systems for heating and electrical equipment. The builders are in great need of such units!

Heat supply facilities, boiler rooms, thermal networks, fuel oil storage tanks are undergoing final preparations for winter, and it would be an unforgivable mistake "to forget" about carrying out measures aimed at fire protection.

Efforts should be made to ensure that automatic fire equipment and the primary means for extinguishing fires are in a state of complete readiness in the city's residential and other buildings. Fire extinguishers must be located in buildings which are combustible. In order to prevent fire hydrants and internal sprinkler systems from freezing, it is essential to warm them in good time and to clean ice and snow off the door covers regularly. Only incombustible materials can be used in warming up expansion tanks, central heating pipes, and loft coverings, while combustible chips and filings and other thermal materials must not be used as they are likely to cause fire.

In order to prepare the city's residential and other buildings for the winter period an inspection of the state of all buildings and installations should be carried out within the shortest period of time by the forces of the local fire and technical committees and by the public; all violations of the Fire Safety Rules which are discovered must be corrected.

Every enterprise, institution and organization should establish a duty roster of responsible persons. Increased protection for facilities should be provided for the evening and night times and non-working days through the use of technical services, fire and technical commissions, engineering and technical employees and members of the volunteer fire units.

All buildings and premises must be provided with suitable means of evacuation; systems for alerting people in case of fire must be worked out; fire prevention studies should be organized and conducted.

The electrical system should be checked for fire safety: the strength of the insulation on the electrical wiring should be measured, and any defects which are discovered should be remedied immediately. A procedure for the organization

and conduct of welding and other work which involves fire must be worked out, and this kind of work must not be permitted without the written permission of the management. Work of this kind causes an extreme fire hazard, and it must be carried out in strict accordance with the fire safety rules. Attention should also be paid to the need for regular and prompt cleaning of flues and air vents especially at public catering enterprises.

Residential employees and the Moscow Volunteer Fire Society must improve the quality of instruction which they offer to the public at places of residence concerning the fire safety rules. In late 1980 the results of the competition among residential organizations will be announced. The degree of fire protection found in the residential buildings will be taken into account when summing up the results of the competition in accordance with the decision of the Moscow City Soviet ispolkom.

Fulfillment of fire protection measures by directors of organizations, institutions facilities and citizens will make it possible to prevent fires.

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SEISMIC STUDY CONDUCTED IN REPUBLIC

Frunze SOVETSKAYA KIRGIZIYA in Russian 5 Nov 80 p 4

[Article by N. Baybekov, deputy chairman of the Kirghiz SSR Gosstroy: "Making Buildings Able to Withstand Disaster"]

[Text] The territory of Kirghizia is characterized by a high rate of seismic activity. In the last 10 years alone our republic has experienced a number of earthquakes (ranging from a force of 6 to a force of 8-9), which have caused significant destruction of buildings and installations. The high seismic risk in many of the republic's rayons makes it necessary to plan and build residential and industrial buildings, hydrotechnical and other installations in such a way that they are capable of withstanding natural disasters. Naturally, this increases their cost significantly. The measures which ensure the seismic stability of buildings are determined during the planning process according to the magnitude of the so-called initial force, that is, the force of the expected earthquakes.

The initial force has been derived up to now from a seismic map compiled in 1964 on the basis of the comparatively limited seismological and geological materials which were available at that time.

The growing volume of capital construction in seismically active regions and the need to erect unique, large-scale hydrotechnical and other facilities under mountainous conditions have made it urgently necessary to have significantly fuller and more reliable data on seismic risk. For this reason USSR Gosstroy and the inter-agency council on seismology and earthquake resistant construction of the USSR Academy of Sciences Presidium worked out a technical assignment for the compilation of a new map of seismic regions, which would specify not only the effects of previous earthquakes but would also specify the location and force of future earthquakes and the probability their recurrences.

This assignment has made it necessary to develop qualitatively new scientific and methodological techniques for the compilation of maps and for the analysis of the vast amount of recent seismological, geological and geophysical material.

For Kirghizia this complex assignment was carried out by M.M. Adyshev (deceased), K.D. Dzhanuzakov, V.I. Il'yasov, K.Ye. Kalmurzayev, V.I. Knauf, V.G. Korolev, Ye.V. Khristov and O.K. Chediya. Their work, entitled "A Cycle of Projects

Which Reflect the Results of Studies to Develop the Scientific and Methodological Foundations for Evaluating the Degree of Seismic Danger, to Create and Put into Practice a New Seismic Map of the Kirghiz SSR on a Scale of 1:2,500,000," was submitted to the competition for the Kirghiz SSR 1980 State Prize in the area of science and technology.

Extensive factual materials and the experience of the authors enabled them to develop and put forward new methods for compiling maps. The essence of these methods lies in the combined analysis of very new and very old geological structures and the evaluation of their probable seismic activity; the analysis is based on statistical seismic data and on traces of strong earthquakes of the distant past--fissures of rocks, avalanches, rock slides, and mud deposits.

The authors of this work revealed for the first time which areas in Kirghizia were most likely to experience earthquakes of varying force and frequency of recurrence. They also proposed modifications especially developed for our geological conditions to the methods for determining the attenuation of seismic tremors in relation to their distance from the epicenter; this made it possible to establish the magnitude of the initial force for any point in the republic.

The authors have used their original work--both theoretical and methodological--to compile detailed seismic maps of a number of economically important areas of the republic (Chuyakaya Depression, the northern part of Oshskaya Oblast), which were approved by Kirghiz Gosstroy and which now function as normative areas. The researchers have also created a seismic map of the entire territory of the republic.

The new map submitted to the competition differs from the previous map in that it not only reflects the seismic effects of the past but also provides a prognosis for the future; the latter is extremely important and should be taken into account when building new facilities.

The authors of this cycle of projects have provided scientific evidence of a one-point reduction in seismic force (in comparison with the previous standard map) for nearly one-fifth of Kirghiz territory, including Issyk-Kul'skaya, Narynskaya and Oshskaya oblasts. This makes possible a reduction of approximately 3 percent in building costs resulting from lowered expenditures for antiseismic measures, while not effecting the degree to which buildings are earthquake proof.

The above provides a sufficiently clear idea of the economic effectiveness and practical value of the scientific investigations which were conducted. The reliability of the prognostic part of the map has been objectively confirmed by the fact that all eight of the strong earthquakes which have occurred in Kirghizia since the map was compiled have fully corresponded in terms of force and location to the predictions made during its compilation. It is no accident that the map has been given a high rating by the inter-agency council of seismology and earthquake-resistant construction. It has become part of the new map of the entire country on which Gosstroy USSR has compiled a draft for the new edition of "Construction Norms and Rules" for earthquake-proof construction in the USSR.

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LESVOS SEA POLLUTION ANALYZED

Athens TA NEA in Greek 2 Jan 81 p 9

[Article by Takis G. Vounatsos: "Not Only Is Athens Polluted...the Lesvos Sea Is Also Slowly Dying"]

[Text] It is not only the pollution of the atmosphere. Nor is it only Athens that is polluted. One of the most terrible destructions of the environment is the pollution of the sea. This time the warning bells toll in the Aegean, in Mytilini [of Lesvos Island].

Gera Bay, one of the most beautiful in Greece and one of the most picturesque areas in Lesvos, is dying slowly--it has already become a dead sea. The fish have been poisoned; they have died or are dying daily; those coming from the open sea are being polluted and are unsuitable for eating. Not only the fish are polluted, but the shellfish also--the crabs, scallops, clams and mussels--have disappeared. The seaweed has been poisoned and has disappeared causing the sea-shore to recede. Special studies have established the obvious destruction of the sea bottom's plant and animal life.

Tourists and area residents have suffered burns on various parts of their bodies and hair loss as a result of swimming in the bay's waters during the summer.

Those guilty of the pollution: the E. N. Surlangas hide-processing industrial unit. More than 1,000 cubic meters of wastes empty daily into Gera Bay, 80 percent of which--according to the Panhellenic Center of Ecological Research [PAKOE]--are carcinogenic substances. Let those who do not care about figures and percentages imagine a procession of tank trucks which empty their poisonous substances daily into the sea...

The 15,000 residents of the area as well as those of the whole island are in an uproar. The only ones who have remained unmoved and indifferent to this abominable crime perpetrated at the expense of the island--its environment and its residents' health--are the appropriate officials from the march down to the personnel of services and from the industry's management to the appropriate ministries which have been flooded with protest telegrams and memoranda.

No one was moved by the protest rallies of the 15,000 Gera Bay area and Mytilini residents who demonstrated in open and closed areas against the pollution of the

bay nor where they moved by the sea "march" of 400 fishermen who with their families arrived on their boats with black sails outside the monarchy mansion at the Mytilini port.

Only later, following the demonstration of all the island's mayors and community presidents in Mytilini, was a directive issued to the employees of the Ministry of Environment and Town and County Planning to launch an investigation and to submit a report which was read by some appropriate authorities and a decision reached. What did they decide? Simply that the Sourlangas plant should implement within 15 months the measures they indicated: the installation at the plant of a system for the biological cleaning of the wastes.

But the Sourlangas industry which has literally destroyed this beautiful, fish-rich bay by unrestrainedly emptying its toxic wastes [into the bay] for so many years has not yet conformed nor has it to this day shown any sign that such a system is to be installed, according to information given to me by residents working in the plant and by Presidents Aris Plataras and Emmanouel Papasoglou of the villages of Perama and Palaiokipos, respectively, as well as by Georgios Spanelis, president of the Perama of Orea Fishermen's Association. As concerns the appropriate services, they issued an announcement denying that the bay and the fish are polluted. According to them the fish died because they were old--because of age!!!

The only ones the appropriate services cannot convince are the victims--the area's residents and the tourists who last summer suffered burns and loss of hair after swimming in the bay water!!! Nor were they able to refute Mikh. Melas, director of the Service for the Regional Development of the Eastern Aegean Islands [YPPAA], who, speaking on the subject on 20 September 1980, said in part:

"A team of scientists including a chemist-oceanographer of the National Council of Environment and Town and County Planning made, on behalf of the Ministry of Coordination, a thorough study of sea and land areas early in June. He subsequently submitted the representative samples from various parts of the sea to Dimokritos which rendered an opinion even more disheartening than most pessimists expected.

"Therefore, the bay is not only polluted but dangerous as well. The destruction of animal and plant life at its bottom is indisputable--a result of the continuing outflow of the Sourlangas plant wastes which total 1,050 cubic meters daily."

"Peculiar Reticence"

In the conclusion of his speech, Melas referred to the following important and revealing facts:

"We deemed it necessary to make a timely study and prepare a comprehensive report on the real facts. Up to that time, besides the objective results of analyses by the Ministry of Social Services in Athens and the persistent efforts of the Merchant Marine Ministry, a peculiar policy of reticence or falsification of true facts was sanctioned with the direct or indirect support of concerned persons!!!"

In its report following the investigation it conducted, PAKOE points out the following: "In the case of the Sourlangas tannery, new types of leather created

after 1970 were especially processed in different colors and qualities. As a result new chemical substances which definitely polluted the environment were used on a daily basis.

Given that from the processing of 1 kilogram of leather there result 40 kilograms of wastes, 80 percent of which are greasy, cancerogenic substances, one can imagine the damage to the various ecosystems of the bay and the dangers the outflow of large percentages of toxic substances into the sea forebodes for the public health.

Proposals: before it is too late and before Gera Bay is destroyed, a complete biochemical cleaning of the wastes should be made and until this is done the operation of the plant should be suspended.

Economic Stagnation

The impact on the economy of the island and the area is serious. The whole area is stagnating economically because the thousands of local people and foreign tourists who each summer flood the area this year left the moment they heard about the situation in the bay and because the main victims are the professional fishermen and their families whose lives depend on the daily wage they earn from fishing. Today these people face the problem of survival. But the businessmen along the beaches who are waiting for the summer months to earn some money sustained great losses this year because they spent a lot of money for provisions. Tourism, which was considerable, is now gone and is not about to return unless the owners of the plant implement the measures recommended by the Ministry of Industry.

Representatives of Residents Speak

Representatives of residents as well as the mayor of Mytilini spoke to me about this serious matter. Mayor Ap. Apostolou who is also president of the Lesvos Municipalities and Communities Union [FEDKL] pointed out in part:

"We consider criminal the apathy the appropriate state officials have shown thus far. Following the people's mobilization some ministries at last have taken action and procedures for the adoption of measures for the restoration of the bay have been initiated. But I fear lest the interest the state services have shown rather late slackens. For this reason we are always on the alert and we will watch to see if the Sournalgas industry applies the conditions dictated and if it implements the measures."

Palaiokipos village President Ermolao Papasoglou said: "We see with bitterness and rage the bay being destroyed. The problem started when some vacationers suffered skin diseases after swimming. The residents of the bay's area are panic-stricken and are afraid to swim because the PAKOE report and the statement by YPPAA Director Melas state clearly that the sea is full of carcinogenic substances! I must also reveal that a 'white fear' prevails in the plant where 300 of our fellow villagers work as laborers and technicians and these men are afraid to talk because they are threatened every day with being fired and that the plant will shut down to avoid being relocated to Volos..." Perama village President Aris Plataras said: "Many years, perhaps a decade, will be needed for the bay to find its life again and to restore it to its original state."

"Our area has become very poor following the state's indifference to do something for our island. The bay was our consolation since it provided our livelihood. The owners of the plant who are local people from Mytilini do not have any affection for our island. They are interested only in profits. In any case, we who feel deeply for our place shall maintain it as much as we can and we will fight to keep what we have inherited from our parents and grandparents."

George Spanellis, president of the Perama Fishermen's Association "O Poseidon," said:

"I appeal to all people and to the state authorities to show sympathy for our island, for our women and children, for us, the workers of the sea, and to save our bay from the devil's mania known as industrial wastes. We are about 400 fishing families who live by this trade alone. Now we remain unemployed because the people are afraid to eat bay fish. We are desperate.

"We stopped fishing because we do not want to provide the people with polluted fish. An average fisherman had an annual income of 150,000 to 200,000 drachmas. At the present time we do not have even 1 drachma for our family's needs. This winter many fishermen will be harvesting olives--what else can we do to provide for our children?"

Fishing Boats With Black Sails

Protest demonstrations were organized in Perama and Mytilini by area residents and the TEOKL. Also a sea march was organized by the fishermen who started out from the bay with their fishing boats and sailed into the Mytilini port. The fishing boats were loaded with the wives and children of the fishermen and had black sails and flags and reached outside the monarchy mansion at the quay where they demonstrated against the state's indifference. PAKOE Professor P. Khristodoulakis was the speaker. He pointed out characteristically that not only is the bay polluted and the health of the area's residents and of those coming in contact with the sea endangered, but also that the pollution has reached a very dangerous level.

In a joint resolution both TEOKL and the Perama Fishermen's Association ask the government, in part:

- a. To suspend the plant's operation immediately until it installs the system for biochemical cleaning [of the wastes].
- b. The workers and technicians of the plant should be compensated by the Surlangas industry as long as the plant remains idle and their reemployment should be obligatory.
- c. Each of the bay's fishermen should be given financial assistance of 100,000 drachmas in order to cope with the tragic financial deadlock they are experiencing.
- d. Immediate financial assistance should be given to the fishermen--loans--so that they may be able to do alterations on their boats and get equipment that will enable them to fish on the open sea.

The struggle of the fishermen and their families as well as of all the islanders will continue more intensely. The Gera Bay must be saved and will be saved because the residents of the area want it and because the present conditions extant in the East Aegean area demand it.

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POLLUTION OF ARNO RIVER BY TANNERIES REPORTED

Rome RASSEGNA SINDACALE in Italian 18 Dec 80 pp 16-17

[Article by Giuseppe De Maria: "Ecce Cromo"]

[Text] Florence--San Miniato, Pucecchio, Santa Croce sull' Arno, Ponte a Egola, Castelfranco di Sotto, Montopoli are six townships located between Empoli and Pontedera along the Arno River. This section is known as the "leather and footwear district," a zone in which ecological balances, and human life itself are drastically endangered by pollutants linked to the tanning industry. (See insert)

The historical narration of this ecological catastrophe appears to have begun with the article by Sergio Saviane (L'ESPRESSO, number 30, 30 July 1978 entitled "Chrome Hell") in which, based on a research project sponsored by a socio-health consortium, the tragic conditions of public health in this zone were clamorously exposed, a zone rightly labeled "Italy's most polluted." However, the significant growth of the tanning industry and the resulting increase in pollution originated much earlier, in the second half of the 1960's. Saviane's article did, however, make waves: since that time, debates, meetings and demonstrations of all kinds against pollution have taken place. Nevertheless, research, restoration and prevention, as well as economic-ecological planning itself are nowhere to be seen.

Thus, the date imposed by the "Merli" law to curtail pollutant dumping to the C Table limits, 13 June 1979, came and went with hardly anything being done.

This was then followed by initial legal actions taken against the outlawed companies, management's threat to shut plants down, two decree laws dealing with the extension of the "Merli" law, two government law proposals to enhance its efficiency, the actual closing down of tanning plants for 1 month and finally, the very harsh struggle against management blackmail and against pollution. All the aforementioned are the results of a unitary effort by all the political and social forces of the left, which at the local level have persuaded management to agree to an accord on funding regarding the acquisition of safety cleaning devices, and, at the national level, the approval of Law 650, (the so-called "Merli-bis").

However, many still note the risk of pressures to further put off enforcing the law dealing with water. Law 650 does not allow any more extensions, according to A. Menchetti, the environmental inspector for the region of Tuscany. He added that contrary to the Merli law, it enjoyed discreet financial backing.

Time frames for passing the law are more than reasonable, and therefore there will be no postponements. Just in the past few days we circulated a memo reminding the communes and provinces of the law's deadlines.

It should be said, however, that although water and air purification are being spotlighted, the businessman also ought to be looking at diverse technological processes. That is, to produce without polluting, or polluting less and recycling polluting agents. This commitment should be the businessman's initiative, while at the same time taking into account the divergent natures of public administration and economic free enterprise. In any case, the regional law for the protection of water calls for financial aid to those who recycle or who modify production cycles to make them less pollutant.

One problem still unsolved, linked to the choice of pollution control plants, involves the sludge discarded by the plants. "This touches on a matter of some complexity," added Dr Gomboli, assistant to the inspector, "which deals with the recycling of matter at the tail end of the production phase. It is necessary to produce wastes in smaller quantities and of a type made easier to handle: at Santa Croce alone the solid waste amounts to 1,000 tons a day, containing materials, chrome, acids, dyes, etc.) which require very complex and diversified treatment."

The situation is also very grave with regard to fauna and vegetation. "In the Arno there is nothing left alive," stated Gomboli. "Trees no longer sprout at Santa Croce in the industrial zone. The few that are still there tend not to grow. They barely manage to stay alive."

At Santa Croce, the hub of this "paradise," A. Cioni, of the local antipollution committee said: "The committee has come into being mainly due to the awareness of a much more widespread need for popular commitment, transcending statute roles and actions undertaken by local organizations, by labor unions and so on. Our relationship with local organizations is of an antagonistic nature, with moments of confrontation as well as of unison: at present, the confrontation involves the passing of law 650 because we do not believe that resources available at every level have been utilized in the fight against pollution."

"We act in harmony with other district committees and in addition to the victory involving closing down the factories and the clash precipitated by management (and here I must add that the role of the labor unions was decisive), we managed to influence goings on in Parliament in a decisive manner with the modification of the Merli law, for which a negative outcome was not at all unexpected. We question the process of polluting while producing and then in turn depolluting, as well as the policy of centralized antipollution plants: pollution is engendered at the production plant, and it is there that it is necessary to act, bringing into question the organization of actual labor and the use of toxic substances. This, unfortunately, is still not even considered as a point of discussion."

The situation can be perceived as being grave also from the standpoint involving disclosure and propagation of an "environmental conscience" at mass levels. "The matter of ecology" stated Falaschi of the Santa Croce Chamber of Commerce, "was

tackled by the labor union since the 1976 conference on production. The reality in which we operate is very complex: it involves a district of 90,000 inhabitants, with 2,000 tanning concerns, of which 580 are here in Santa Croce alone, with an average of 7 employees per concern, severe ups and downs, and a very pronounced migration from the south. We encounter very serious difficulties concerning CDF type contributions, explainable in part because employment in the tannery industry is of a transient nature.

"However, and in this we are in total agreement with the antipollution committee," added Falaschi, "until we act directly at the factory level, these problems will never be resolved. We affirm this once more in a clear and decisive manner in the rebuttal we are preparing, where we also make reference to several types of actions to be taken (recycling of prime resources, etc.)."

Hygienic-environmental problems are not considered that relevant by the majority of the population, despite the fact that it involves the lives and health of those who live here. Something is afoot, though. "This past year has surely witnessed a great attention focused on these themes," said Comrade Scarselli, also of the Santa Croce Chamber of Commerce, "be it by the businessman as well as by the workers and the population involved. The problem remains, however, that many of these are families of former tannery workers, now in management positions, and whose main driving force often is profit, together with formulating health versus capital equations. A sense of conscience and consent with respect to these themes still has a long way to go."

High Price for One's Hide

The tanning industry is one of very high profits. An employee may average 40 million lire annually, with overtime salaries often going beyond 1 million lire. In terms of health and human lives, however, the costs are also very high. In October 1979 in fact, Judge Di Filippo of San Miniato, having ascertained levels of pollution not compatible with human life, ordered a series of provisions which went considerably beyond the Merli law. A 60-percent reduction in pollution was obtained by reducing and controlling the rate of production (limiting overtime, etc.).

Substances used in the tanning process are highly toxic (sulphides, ammonia, tannin, hydrogen sulphide) or highly carcinogenic (chrome salts, aniline, etc.). Investigations at Santa Croce on the causes of death, for the decade 1965-1974 revealed that the total percentage of males (aged 15-70) whose death was tumor-related was 36.4 percent, a significant 7.4 percent higher than the national average, which stands at 29 percent. The comparison becomes even more awesome if one considers death linked to tumors in women: from 33 percent, which is the national average, the high climbs to an incredible 45 percent, a 12-percent difference.

In the 3-year period from 1975-1977, again at Santa Croce, in the 15-80 year age bracket, tumor-related deaths were fixed at 38.4 percent, which, considering all age brackets, averages about 23.2 percent compared to a national average of 20.5 percent. From 1978 to 1979, the total percentage of deaths attributed to cancer increased from 30.5 percent to 32.2 percent. In this location, therefore, one lives a shorter timespan (an average of 6 years less) and dies of cancer with greater frequency. Those most affected are those who work in the tannery plants, and among these, most are women: between 1970 and 1974, about 60 percent of the women who worked in tanneries have died of cancer.

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